Technology expands scope of services

Tokushima University Hospital is responsible for providing healthcare to the Tokushima Prefecture in Japan. As a core medical institution for the region, the hospital recently opened a new outpatient clinic as part of an ongoing drive to enhance its high-quality medical services. One of the hospital’s defining characteristics is its commitment to using information and communication technology (ICT) in the provision of medical care. This includes electronic medical records (EMR) and its Picture Archiving and Communication System (PACS). The systems run on an advanced infrastructure platform supporting virtual servers, virtual desktops, and tablets. The organization has plans to continuously improve its technology, beginning with its PACS systems, followed by the deployment of new image management systems for its cardiovascular and surgery departments.

The hospital was, at one point, running between 70 and 100 different systems. All of these systems were built and then deployed as needed by the hospital. This meant that servers, storage, and applications were dedicated to individual systems, leading to inefficiencies and increased management. Tokushima University Hospital wanted to build an integrated storage platform to accommodate different types of medical data. This issue was pressing because of the growth in medical data—CT and MRI modalities mean multiple creation of output image data—which is compounded by image data produced by the cardiovascular, endoscopy, ultrasound, and surgery departments. With legal requirements to retain medical data as a teaching hospital, and the increasing use of video that places new demands on storage, the organization had an even greater need for long-term storage than other medical institutions.

Tokushima University Hospital considered several training intensive vendor solutions before choosing Dell EMC to implement Dell EMC® Isilon® scale-out storage.

In moving to a single storage platform that can hold different types of medical data including records, images, and video, Tokushima University Hospital has reduced complexity while meeting its varied storage requirements. With longer-term plans to deploy image management systems for cardiovascular and surgery, data can be shared across hospitals in the prefecture, as well as workflow systems for patient management data, tests, and procedures. The ability to share information across the prefecture will contribute to improved medical services and efficient use of the hospital’s resources and facilities.
Tokushima University Hospital deployed a single 11 node cluster comprising Dell EMC Isilon X200 with six nodes for data accessed frequently, and a Dell EMC Isilon NL400 with five nodes for its archival layer to balance performance and cost efficiencies.

Ken’ichiro Shimai, Assistant Professor of Medical IT Center at Tokushima University Hospital, explains, “Previously our disparate systems were handled by different vendors. With Dell EMC Isilon, we have a fully integrated storage platform to enable applications to be installed cross-platform, without being tied to the individual lifecycles of equipment and applications. We now have the storage resources in place for the next five years, which completely changes our procurement model and planning for IT resources.”

**Maintenance costs reduced by 90 percent**

The integrated storage platform has eliminated the preparation and deployment of individual applications and hardware. With remote deployment and monitoring, issues are solved ahead of time, enabling IT personnel and resources to be redirected to enhance the provision of medical care services. Shimai says, “We have reduced our maintenance costs by 90 percent by removing the need to individually address each problem.” Maintenance costs have been reduced further through the efficient allocation of data according to need and frequency of access, helping the hospital control costs. Through space efficiencies, the hospital has been able to archive data from systems no longer used, which can now be collated and stored on the single storage platform.

“We have the flexibility to determine the most efficient storage for each system. For example, Dell EMC Isilon NL series storage provides the performance required for our virtual slide project, which reduces our costs without compromising response times,” says Shimai.

**Drives further innovation**

Tokushima University Hospital has a number of plans in place to use technology innovatively to support the provision of high-quality medical care. This includes a pathological virtual slide system, a medical document management system, an endoscope image system, a surgery image storage system, and a radiology image system that can share data with other hospitals. All of the generated data will be stored on the Dell EMC Isilon system. “Dell EMC Isilon is the perfect fit for medical institutions because it is helping us gain the maximum value from the data we have at our disposal.”

**Data analytics-ready**

The storage of log data provides Tokushima University Hospital with a starting point for big data analytics and the ability to improve responsiveness to any medical scenario in order to positively impact outcomes. The hospital can now track every workflow, from medical care—including examination, diagnosis, and treatment—to payment.
Shimai says, “Analyzing the data of system access logs helps us make smart decisions about our level of care, the way we make use of facilities, and the resources we have available. We can track seasonal variations and ensure the status of individual employees and wards is visible. We can also use this information to tailor our ordering to match the status of the outpatients that are coming to use services at the hospital.”

The hospital is looking to build upon this data and knowledge to plan for the immediate and long-term future. “We can run simulations to see what can happen in certain circumstances. This is critical data when it comes to improving the way we work and making the best use of the facilities we have at the hospital,” says Shimai.

Promotes data sharing

The new storage platform is playing a significant role beyond the confines of the hospital. The ICT model deployed by Tokushima University Hospital has become a roadmap for all medical institutions within the Tokushima Prefecture as a means of sharing resources and providing improved services.

Shimai says, “Many institutions are seeking ways to update or overhaul their data systems to meet changing needs and increasing volumes of data. This represents a chance to innovate the model for system architecture by moving to a more flexible method of data storage.” Shimai continues, “We now have a technology platform that really contributes to the way we provide our services and the quality of care provided. Looking ahead, I am excited to see how Dell EMC can help us attain our goals.”