

Kettering General Hospital 
NHS Foundation Trust

Organization

Kettering General Hospital
Kettering, Northants, UK
www.kgh.nhs.uk

Industry

Public Sector

Challenge

- PACS images are large files: a complete CT scan can contain hundreds of images and clinical staff needed to search through all images, perhaps 500Mb of information, with each image taking upwards of a minute to load.

Highlights/Benefits

- The ProxySG devices have decreased the time taken to load a single large image, such as a chest X-ray, from around a minute to approx 5 to 10 seconds, a wait-time reduction of 80%. The big benefit was being able to provide medical images on demand – changing it from 24 hours to several seconds. By sending images across the WAN, the hospital speeds delivery and no longer incurs the cost of printing images on film, and couriering them on a daily basis to regional clinics, to overcome the poor performance, which was costing in the region of £20,000 per year.

Kettering General Hospital

Kettering General Hospital is an established district general hospital which provides a wide range of medical services to about 300,000 people in North Northamptonshire. The hospital has served its local community since 1897 and today employs more than 3,200 staff at its main site in Kettering, which is home to a busy and modern Accident and Emergency (A&E) department. The National Health Service (NHS) Trust also runs a wide range of outpatient clinics in neighbouring towns of Corby, Wellingborough and Rushden and it has developed many state-of-the-art facilities run by highly qualified staff including a large maternity wing, 17 operating theatres and provides excellent diagnostic facilities such as CT and MRI scanners.

The Challenge

Central to the Hospital's operations is ensuring that staff have full access to the information and data they need to be able to provide the highest quality care for patients. To further enhance the service they provided, in October 2006, the NHS Trust deployed a Picture Archiving and Communication System (PACS) to create a centralised, electronic store of images to replace the hard copy based means of managing medical images and to enable remote users to access images for off-site viewing and reporting. PACS enables doctors and other health professionals to access images such as X-rays, CT scans and MRI scans, and compare them with previous images, at the touch of a button.

Phil Taylor, Senior Operations Analyst for the Kettering General Hospital NHS Trust, comments "Moving these high quality images within the main site at Kettering was fine thanks to a 1000 Mps network, however, some remote sites, in particular Rushden Hospital, which is situated 12 miles from the main Kettering campus, were unable to access images. The transfer time was too long for each image and often would time-out before the full image had loaded."

Rushden is 5 LAN network hops from Kettering across leased lines shared between the PACS data and other clinical systems. PACS images are large files: a complete CT scan can contain hundreds of images and clinical staff needed to search through all images, perhaps 500Mb of information, with each image taking upwards of a minute to load. To overcome the poor performance, MRI scans and X-rays that took place at Kettering Hospital were printed onto film and delivered daily to the regional clinics, costing in the region of £200 per clinic.

As well as the high financial cost, the process also had time implications as medical staff had to provide 24 hours notice of the images that they needed which could delay the speed with which a patient could be diagnosed and treated. In preparation for clinics, the PACS department would process the request and courier images to the relevant location – a labour intensive process which required a full-time employee to take responsibility for collating the requests, creating the films and delivering them to the remote sites.

Phil Taylor comments "From a financial perspective the cost of printing off images was enormous and for this reason we needed to review the ways in which the process was working. From a service point of view, we also wanted to find a solution which would enable us to 'open up' the PACS system to provide a system that delivered medical images on demand, minimised lost records, reduced administrative overhead and saved

costs. We're an advanced, 21st century facility with state-of-the-art provisions for our patients and we wanted our internal communications systems to reflect this."

The Solution

The IT department considered a number of options in order to make the PACS systems usable. Phil continues: "For the remote sites a 10MB link just wasn't enough so we considered increasing the bandwidth to 100MB – however this would have cost around £30,000 per year on an ongoing basis. We also considered the option of a microwave network link, however, this would need to have been in the line of sight of the remote location."

Phil had previous experience of working with Blue Coat and recommended that the Trust install a pair of Blue Coat® ProxySG® devices to provide WAN optimisation technologies, one at the central site and one at Rushden Hospital. The devices provide object caching, byte caching, compression and protocol optimisation options to dramatically improve the speed with which images can be sent and loaded. These appliances provide visibility into the WAN and enable mission-critical traffic to be accelerated and malicious or unimportant traffic to be stopped or managed. The result is increases in productivity, reduced bandwidth consumption and greater efficiency of applications and infrastructure.

Installation of the system was quick and straightforward as Phil comments: "We were able to implement the devices with the minimum of disruption to our services – installation took around a day and the configuring and testing was aided by a skilled team from Blue Coat."

The Benefits

The ProxySG devices have decreased the time taken to load a single large image, such as a chest X-ray, from around a minute to approx 5 to 10 seconds, a wait-time reduction of 80%. The big benefit was being able to provide medical images on demand – changing it from 24 hours to several seconds. Installing the ProxyClient® software has enabled images to be delivered quickly and efficiently to physicians working away from the hospital and apart from the acceleration and protection of the ProxySG appliances.

Following a two-week initial trial, during which vast amounts of data were sent, staff were amazed at the results. Phil comments: "The alternatives available to us just weren't workable – with Blue Coat we have a highly effective solution, with a predictable cost which delivers the functionality we needed. Having worked with Blue Coat before, I was confident the devices would deliver exactly what we needed, and staff feedback was fantastic – they were bowled over by the speed and ease with which we could load and send images."



By sending images across the WAN, the hospital speeds delivery and no longer incurs the cost of printing images on film, and couriering them on a daily basis to regional clinics, to overcome the poor performance, which was costing in the region of £20,000 per year.

Phil continues: "As well as cost and administrative time savings, ultimately, PACS is designed to improve the speed with which patients can be treated and we're confident that these benefits can now be fully realised thanks to Blue Coat. The deployment of these devices has ensured that our investment in PACS can deliver the cost savings and health benefits we envisaged, which in turn enhances our reputation with the staff we serve and their patients."

The Future

In addition to the improvements in the PACS solution, a side benefit of the Blue Coat solution is that other applications have been accelerated and parts of the remote site traffic have also benefited from an increase in performance, for example access to an Orthotics Database has improved since the Blue Coat systems were installed.

Internet content can now be accessed much faster than originally and the Trust will be able to manage unwanted content such as P2P applications.

Such has been the success of the deployment, that Kettering Hospital is now considering use of the ProxySG Devices at additional sites to further improve services across the Trust and to make use of the web security functionality to protect the network from malware, viruses and other web threats.