HP customer case study: HP supplies an efficient SAN solution for the Carl Thiem Clinic in Cottbus, Germany

Industry: Healthcare, Public Sector

Intelligent storage for hospital systems

Carl-Thiem-Klinikum Cottbus

"With the implementation of a Radiological Information System (RIS) in conjunction with a Picture Archiving and Communication System (PACS), we are one step closer to a digital hospital. Highly sensitive data is managed and stored by the new SAN. This will enable the risk for our IT department to be reduced to a minimum." Bernhard Kaufmann, head of the medical computing and documentation department at the Carl Thiem Clinic (CTK) in Cottbus

Objective:

At Carl Thiem Clinic in Cottbus valuable patient diagnosis time was being wasted owing to a shortage of system interfaces between the hospital IT system and the individual departmental systems. Decentralised storage management made the administrators' work more difficult and increased the risk of system failure.

Approach:

- The Carl Thiem Clinic (CTK) in Cottbus implemented a radiological information system (RIS) to provide the basis of more efficient treatment for patients.
- GE Healthcare implemented the Centricity® Radiological Information System (RIS) in conjunction with a Picture Archiving Communication System (PACS).
- At the same time, a Storage Area Network (SAN) was installed based on the HP StorageWorks EVA5000.
- The IT infrastructure was supplied and implemented by HP partner IBH Prof. Dr. Horn, which also set up the Wide Area Network and Virtual Private Network.

IT improvements:

- A high level of performance is achieved with the SAN as the LAN is freed of all data backup and archiving tasks.
- Centralised storage management makes the administrators' work easier. New functionalities prevent unnecessary downtime.

Business benefits:

- The RIS/PACS-KIS system enables radiology data to be digitally compiled and the integration of all other hospital processes. This has improved pre-diagnosis, reduced patient lengths of stay and improved doctors' efficiency.
- The CTK is saving money with the new solution.

Pressure on companies is constantly increasing. Processes must be simplified, thereby reducing costs. In a backdrop of health reform, this is all the more relevant for hospitals in Germany. An accounting system has recently been set up, whereby private health funds only pay a flat rate for hospital stays whose level will be determined each year during the current transition phase. In 2009, these rates will be codified. Thereafter, the same prices for in-patient treatment will be applicable throughout Germany (or throughout the federal states). As a consequence, efficiency is increasingly becoming a must in hospitals.

The Carl Thiem Clinic (CTK) in Cottbus, Germany, is also faced with this situation. Among the 700 hospitals with government or local authority funding, the CTK, with some 1,300 beds, is one of the largest clinics in Germany – and this is likely to remain the case. "We can assume that maybe 1,800 hospitals

Customer solution at a glance

Primary applications

- Centricity® Radiological Information System

Primary hardware

- HP StorageWorks EVA5000

Primary software

- HP Systems Insight Manager

will remain out of the 2,200 that are currently operational in Germany," forecasts Bernhard Kaufmann, head of the medical computing and documentation department at Carl Thiem Clinic. "In particular, in the current climate of increasing competition between hospitals and the transfer of current in-patient therapies to an out-patient setting, enormous cost pressure is being exerted on hospitals. It is therefore essential for hospitals to optimise internal processes from all economic perspectives and ensure constant cost transparency. Lengths of stay must be kept as short as possible and at the same time, treatment quality must be optimised.

The role of IT in the health system

It is however far more difficult to put these requirements into practice. Systems within the numerous departments in a hospital often communicate with each other poorly or not at all – by duplicating patient data, valuable time is wasted that could be used for treating patients. Seamless integration of all applications in conjunction with electronic patient documents is therefore required. This is one reason which led to a review of the IT infrastructure at the Carl Thiem Clinic in Cottbus.

"There were a number of reasons why we wanted to significantly speed up the processes involved in diagnosis." emphasises Kaufmann. "First of all, we cannot examine a patient for several days in pre-diagnosis, only to waste a certain length of time looking for the old x-ray images. This process must be improved, for cost reasons as well. We also have to archive some x-rays for up to 30 years. As a result, the archives were full and valuable time was also being wasted looking for the right document. Last but not least, costs are accrued in developing the films," adds Kaufmann.

Therefore, the Carl Thiem Clinic in Cottbus decided to implement a Radiological Information System (RIS) in conjunction with the Picture Archiving and Communication System (PACS). Besides digitally compiling radiology data, the system also enables the integration of all other imaging processes within the hospital. Digital health documents are also planned for the near future. Without modern storage technology however, such projects can not be accounted for in any reasonable risk assessment.

Intelligent storage system needed

The contract for an integrated RIS/PACS system went to GE Healthcare in Dornstadt. It had already become apparent that the previous storage system was inappropriate for current requirements. This is because the Carl Thiem Clinic in Cottbus had been using the server hardware's internal hard drive resources, with the limitation that aspects such as security, data sharing and serverless backup were left open. "It was clear to us that we needed to be more flexible in terms of storage," states Kaufmann.

"Therefore we have consolidated our storage system in the past two years using a Storage Area Network (SAN), which was at the top of our IT department's wish list. The reason for this is that it is the only way to manage and store highly sensitive data without an intolerable risk. In the past the backup was run at night via the network, sometimes taking up to eight hours. In our line of work, this is untenable. We desperately needed centralised storage management. A storage subsystem was therefore included in the invitation to tender for the PACS system."

There was no hesitation when it came to choosing the IT infrastructure provider. The Carl Thiem Clinic in Cottbus has been almost exclusively using HP systems for its server and storage needs for many years. "We are very satisfied customers of HP. We have had very good experiences with HP ProLiant servers – at the moment we are using the ES45, DL320, DL360, DL380 and BladeSystem servers. Everything is right in terms of performance, reliability etc. Furthermore, we are impressed with the HP Systems Insight Manager which is a convenient monitoring tool for hard and software in operational use and with the recovery capabilities of the Altiris software," states Kaufmann.

The HP StorageWorks Enterprise Virtual Array (EVA5000) with current storage capacity of 15 TB is the basis of the new SAN. The servers are connected to the EVA5000 with fibre channels. This gives a high level of performance and to a large extent the Local Area Network (LAN) is freed up of all data backup and archiving tasks. Furthermore, centralised storage management makes the administrators' work easier. Functionalities such as 'backup to disk', 'snap shot' and 'snap copy' prevent unnecessary downtime in daily operations. A tape library is also integrated in the SAN capable of backing up data without overloading the LAN. The necessary data backup measures are carried out using a backup server. All SAN components are connected with two redundant fibre channel fabrics.

Hand in Hand

The IT infrastructure for the SAN was supplied and implemented by HP partner IBH Prof. Dr. Horn. IBH also contributed expertise on Wide Area Network (WAN) connections and Virtual Private Network (VPN), as a VPN solution was used to connect external sites. This enables dynamic bandwidth use of existing cables to give a convergent network, which means that both data and language can be transferred easily.

What made this project special was the way in which all involved worked closely together. Without this, it would not have been possible to get the integrated RIS/PACS including the SAN up and running after a record-breaking implementing phase of three months. "The short space of time between the first delivery and the RIS going live is record-breaking. The close collaboration between the clinic, GE, IBH and HP on one hand and the hospital departments, doctors and the IT department on the other was the main factor for success. All partners gave 100 per cent. Only in this way was it possible to reach a satisfactory solution to the critical issue of interface problems. The order data interface, results data interface and performance data interface between the hospital IT system and the RIS are now achieved via an e*Gate Communication Server in HL7 format which is the gold standard in medicine."

Successfully Operational

Now that Carl Thiem Clinic are using the Centricity® RIS/PACS, image data generated in radiology can be provided on individual demand to the hospital departments without x-ray film and paper-free in accordance with the clinical pathway via a browser. With over 50 RIS workstations, radiology assistants have all the support they need. Diagnoses are made by radiologists on 12 workstations with different display configurations (up to a maximum of five mega pixel resolution for mammograms) and integrated voice recognition. Additional film scanners ensure that x-rays on film brought in by patients can also be integrated in the system. In future, patients will be issued with a CD of their x-rays rather than a film providing them with the results of their examination.

By installing and connecting Viewpoint, an organisational system including interpretation for the ultrasound and endoscopy departments, a further important step has been made towards creating a digital hospital. "Pre-diagnosis has been significantly shortened, patient lengths of stay have been reduced and our doctors' efficiency has considerably increased," states Kaufmann, showing his satisfaction with the results. "Obviously, it is not possible to put hard figures on these benefits. However, the previous costs of the old system were certainly higher than the hard and software maintenance costs of our current PACS system."

And what's the news in terms of storage? There is no longer any back-up traffic on the network and it is possible to minimise downtime. The HP StorageWorks EVA5000 is large enough to absorb volumes of data from other and future applications. The hospital IT system will soon be migrated to an HP Integrity rx4640 Server, whereby hard drives for the database will then be made available by the EVA5000. "The most important advantages of a virtual array are obviously redundancy and central management. This ensures that the risk for our IT department is reduced to a minimum," concludes Kaufmann.

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