

Barnet and Chase Farm Hospitals NHS Trust expands its use of Gigabit Ethernet to meet the performance demands of life-saving applications.

The hospital is implementing Intel® Gigabit Ethernet on its servers to maximise network performance and availability, making ready for the introduction of new patient care systems that will improve the quality and efficiency of its service to the public.

Case Highlights

Profiled Organisation	Barnet and Chase Farm Hospitals NHS Trust (whose IT, at Barnet Hospital, is managed by Siemens Healthcare Services).
Challenge	Barnet and Chase Farm Hospitals NHS Trust is currently introducing a number of advanced medical-care systems and clinical applications that will require higher levels of throughput, availability and network performance.
Solution	To provide sufficient bandwidth and performance for management of the increased volumes of data traffic that will be generated, the hospital is implementing Gigabit Ethernet on its servers based on Intel's Network Adapter cards.
Benefits	The additional performance, bandwidth and resilience offered by Intel® Gigabit Ethernet will provide users with 24x7 high-speed network availability, ensure the hospital's IT infrastructure is ready for future expansion, and enable its IT services team to meet Service Level Agreement (SLA) targets.

Summary

As the managed-service provider at Barnet Hospital to Barnet and Chase Farm Hospitals NHS Trust, Siemens Healthcare Services (SHS) is responsible for guaranteeing availability of the infrastructure and managing technology life-cycles. It is currently carrying out a programme of business process re-engineering involving the introduction of many advanced systems and applications, the combined impact of which will be to create a much heavier overall demand for network availability, throughput and performance.

Ever-increasing volumes of data also mean the hospital needs to boost the data transfer rate of its servers if it is to continue performing business-critical backups within the limited overnight window.

To address this future requirement, SHS is extending its use of Gigabit Ethernet to the servers currently being added to its network. This will provide the hospital's IT team with the bandwidth, performance and scalability that will enable it to handle the anticipated increase in data-traffic volume, which will be generated over the coming months.

The additional performance offered by Intel® Gigabit Ethernet will not only provide users across the hospital campus with 24x7 high-speed network availability, but will also prepare the IT infrastructure for the future. Moreover, the solution will enable the SHS team to meet its Service Level Agreement (SLA) targets by maximising network availability and throughput.

Challenge: The need for better throughput, availability and network performance.

Barnet and Chase Farm, a major NHS Trust, based at two main hospital sites in North London, provides general and specialist care to patients. As part of a 33-year, £500m Private Finance Initiative (PFI) contract signed in February 1999, Siemens Healthcare Services (SHS), a UK market leader in the provision of managed services to the public health sector, manages the IT infrastructure at the 475-bed Barnet Hospital. Under the terms of the agreement, all hospital IT staff and equipment became part of the Siemens organisation that is now contracted to guarantee availability and manage technology life-cycles.

In the NHS environment, more than most, efficient, robust and highly available network infrastructure is essential in the successful provision of patient care and can often mean the difference between life and death. The main task facing SHS, therefore, is to provide users across the hospital campus with 24x7 high-speed network availability and performance. At the same time, it has an obligation to meet the performance targets specified in its Service Level Agreement (SLA) with the hospital Trust.

Central to SHS's task of providing the hospital with seamless, integrated managed technology services is a programme of business process re-engineering involving the gradual introduction of many new systems and applications. These include an Electronic Patient Record (EPR) system, a large SAP application that integrates the hospital's finance, payroll and personnel systems, plus a wide range of clinical and administrative applications.

As a result, Ken Bates, IT Services Manager, and his team now find themselves having to back up ever-increasing volumes of data. They realised some time ago that they needed to improve the data transfer rate on the hospital's servers dramatically if they were to successfully complete business-critical backups within the overnight window. Furthermore, Ken Bates anticipates an even heavier demand for data throughput in the future, once the Trust moves towards the implementation of a PACS system, an application that involves the transfer of very large diagnostic image files requiring hefty amounts of bandwidth.

Equally demanding, in terms of network resource, is Barnet's EPR application, which is designed to improve the way patients are treated and to get them through the hospital's procedures in the most cost-effective way. This system is accessed on a 24x7 basis by staff in almost every department of the hospital, which means it must be highly available and responsive at all times.

Process: Implementing a solution before a problem arises

"In terms of throughput and availability, the overall impact of these new systems and applications will be to place much greater demands on the performance of the network than ever before," says Ken Bates. "Without taking into consideration all the new applications we're planning to introduce, we were already having to back up alarming amounts of data. We knew that if we didn't improve the existing data-transfer rate from our servers, we'd soon be unable to complete these crucial backups overnight. You could say that, by implementing Intel® Gigabit Ethernet on the new generation of servers we're currently installing, we're putting a solution in place before we have a problem."

Ken Bates says that when SHS took over the running of Barnet Hospital's IT operation in April, 1999, the hospital was operating a somewhat disjointed network comprising switches, hubs and routers from a variety of vendors. "There was no resilience to speak of, which meant that if one element in the network went down, that was that. For that reason, our initial task was to install a new network and phase out its ageing predecessor," he says.

It was at this stage that Gigabit Ethernet was first implemented by the hospital in the backbone of its new Cisco* network, running between two core switches that connect to 16 floor-based hub rooms. These rooms house the secondary switches and routers that provide the connectivity to over 1000 desktop computers located in the many outlying departments around the hospital campus. They have dual connections to the switches, so that, in the event of one link going down, the other will automatically take over.

Solution: Implementing Gigabit Ethernet to support resource-hungry applications

By extending the use of Gigabit Ethernet, based on Intel's adapter cards, to the hospital's 24 new servers located around the hospital campus, Ken Bates and his team are aiming to meet the heavy demand for throughput that will be needed by the impending arrival of the PACS system. Ken Bates says that, in a hospital environment, high performance is just as important as availability. "It's no use having availability, for instance, if it takes two or three minutes to perform a transaction," he says.

"When we first introduced Gigabit Ethernet in the backbone network, it was to improve performance for our end users," he says. "What we're doing now is to extend the use of the Intel solution in order to future-proof our network infrastructure as our user population and range of applications continue to grow."

Since the hospital is funded by taxpayers' money, Ken Bates says that one of his team's most important considerations in managing the hospital's network infrastructure is to show a return on investment. He says his team is always highly conscious not only of the network's critical importance to patients' lives, but also of the need to show value for money in the way they operate and manage it.

"Intel® Gigabit Ethernet undoubtedly provides us with that added value because, without it, the throughput on our network would be nowhere near that which we will require to support the many resource-hungry clinical applications we are planning to introduce. It will not only provide the means to anticipate overloads in network traffic, but also enable us to confidently predict bottlenecks before they are allowed to cause a problem."

Future:

"On the one hand, the implementation of Intel® Gigabit Ethernet will help us to provide users across the hospital campus with 24x7 high-speed network availability. On the other hand, by maximising network performance and availability, it will enable us to meet the performance targets laid down in our Service Level Agreement (SLA) with the Trust. What's more, we believe it will help to ensure that the hospital's IT infrastructure remains future-proof for many years to come," concludes Ken Bates.

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