

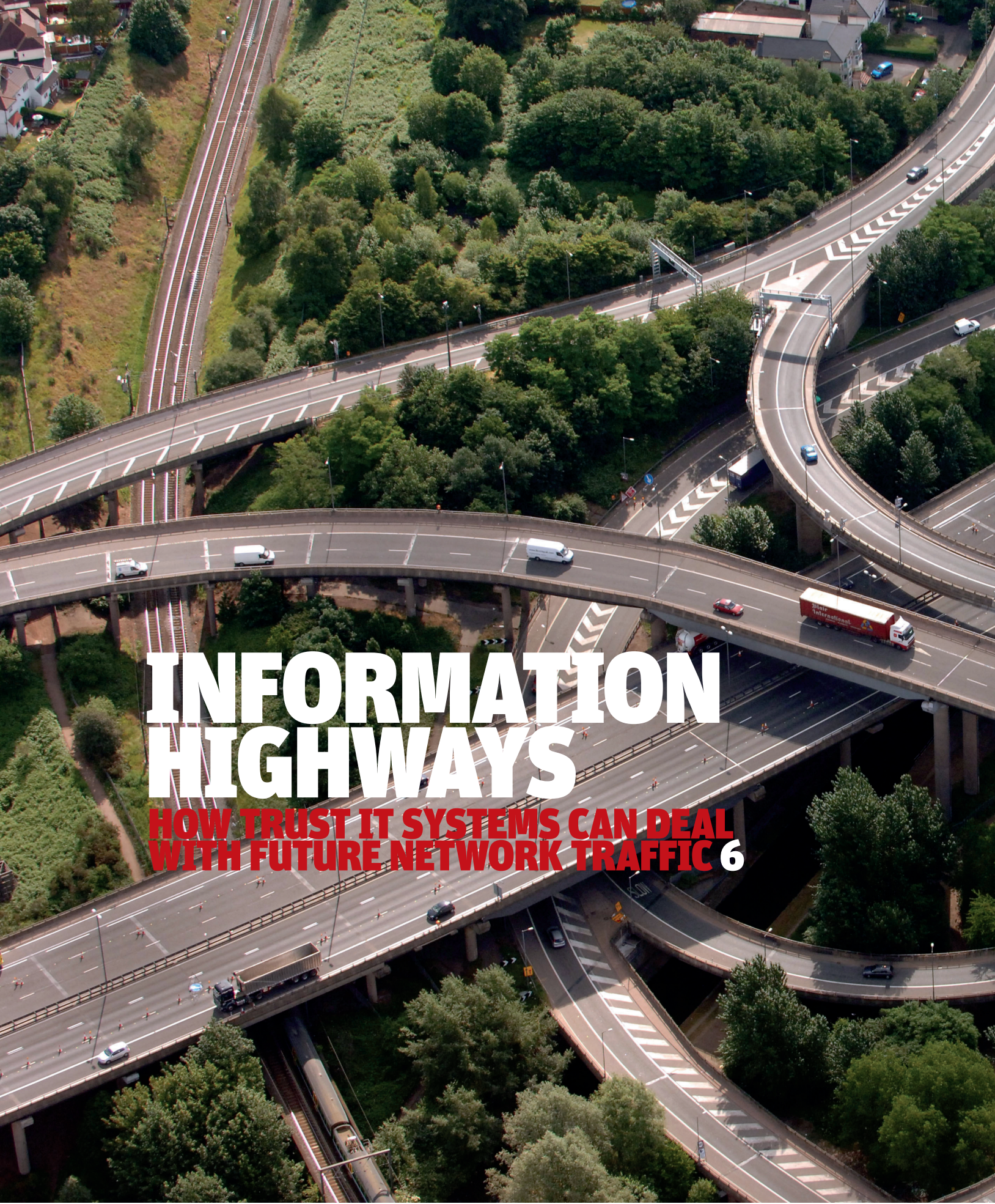
HEALTH SERVICE JOURNAL

FOR HEALTHCARE LEADERS

HSJ

EFFICIENCY

AN HSJ SUPPLEMENT/27 SEPTEMBER 2012



INFORMATION HIGHWAYS

HOW TRUST IT SYSTEMS CAN DEAL
WITH FUTURE NETWORK TRAFFIC 6



“ There has been, and will continue to be, much debate over the efficiency challenge facing the NHS, and whether such savings can be made at the same time as transforming the service. Can you really deliver quality, innovation, productivity and prevention improvements all at the same time?

One of the key tools that can help to deliver a positive answer has been in the kitbag of all NHS organisations for around two decades but has yet to realise its true potential. That tool is information and communications technology.

In the NHS, it is typical to find ICT departments delivering very good services to the organisation they are supporting. Their services are often critical to the business and any outage is certainly noticed more today than ever before. However, increasingly we are seeing ICT emerging as a true enabler, intrinsically linked to the needs of the business.

So what do we mean by business-led? Surely ICT is always business-led? To some extent, this is true. Historically, ICT departments have worked to a budget to deliver the best service possible. This has been coupled with capital programmes for high value projects where ICT has been recognised as a prerequisite. However, a shift in thinking is seeing business leaders taking a more strategic view of ICT, where business plans or discrete projects are the starting point for technology enablement.

‘Plan ICT based on need. Then build the solution from the bottom up’

For example, take a business operation such as Hospital at Night (H@N). Taking the time to understand the workflow requirements of this critical function allows us to consider a solution from the perspectives of people, process and technology. H@N requires real-time communication, task allocation and prioritisation, information management, collaboration and an audit trail. Once we understand these, we can plan a solution and then understand how that should be supported by infrastructure. The Nottingham hospitals case study featured in this supplement is an excellent example of business-led ICT and undoubtedly meets all aspects of QIPP.

In simplistic terms, Cisco advocates a “plan down, build up” approach to NHS ICT. Plan your ICT solutions based on business need. Then build the solution from the bottom up, ensuring you have all the features required to deliver the solution effectively. In this way ICT can return much more value back to the business.

By doing the homework together, we can determine the technical solutions that address business problems, and deliver against as many of the QIPP pillars as possible.

Terry Espiner is health sector manager UK at Cisco
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TECHNOLOGY

OPEN ROADS

The traffic on NHS computing systems is surging – and needs infrastructure that can cope. By Claire Read

Ask Mike Badham to explain his job – solutions architect for the UK healthcare team of computer networking giant Cisco – and he offers an interesting analogy. If you are building a road network, he explains, you really only want to build it once and design in all the intelligence you need, such as bus lanes or traffic lights. Fundamentally, you want the system used to transport things from A to B to be fit for purpose for the present and foreseeable future.

It is an approach that, he says, is equally important when it comes to healthcare IT. “Information technology is an obvious area where invest-to-save can work,” emphasises Mr Badham. “But it has to be planned appropriately.”

In other words, before investing in solutions such as e-prescribing and barcode tracking, it is necessary to ensure the infrastructure is in place to run those systems effectively. Where cars run on roads, software runs on a network.

Great Ormond Street Hospital is only too aware of the problems of introducing an IT solution on a network ill equipped to run it. A few years back, e-prescribing was launched at the hospital, relying on mobile computers and a wireless signal.

“The problem was that the signal was too weak, and there were black spots where there was no signal at all,” recalls Martin Elliott, professor in cardiothoracic surgery and the trust’s medical director. “And you cannot do clinical care with black spots. It doesn’t work. It’s just too unreliable.”

Experiences like this prompted the trust to turn to Cisco’s “architectural” approach to healthcare IT. In simple terms, the idea is to make sure the nuts and bolts of IT infrastructure are up to scratch before investing in more complex solutions – similar to ensuring a PC has the specifications to run all required software before purchasing the software.

“The ethos is to consider the business requirements of an organisation, from a trust strategy point of view right down to

individual business projects,” explains Mr Badham. “You then invest in the infrastructure once to ensure you’ve got all the capabilities you need. But after that you can exploit the investment over and over and over again.”

It is an approach that, for Great Ormond Street, has led to a huge range of improvements (see case study, overleaf). A fundamental overhaul of IT infrastructure means that e-prescribing now works effectively and the trust’s 10-year-old picture archiving and communications system (PACS) has been replaced. Other advances included the introduction of high quality video conferencing throughout the hospital, a radio frequency identification (RFID) system which makes it possible to track assets such as wheelchairs to an average accuracy of two metres, electronic note taking at the bedside, and a massive email system upgrade. The result has not only been efficiency savings but also improvements in patient care.

Video links

“The video system, for instance, has actually changed the way we work with our patients,” explains Mark Large, the trust’s director of ICT. “Why would we ask patients and families or indeed our staff to travel across the country when an appointment or meeting could be held via a video link?”

“I can envisage a time where it’s cheaper to give a patient an iPad loaded up with video conferencing and a secure copy of their medical record than it is to see them in outpatients,” argues Professor Elliott. “And certainly that matters if you live in Aberdeen and you’ve got to bring a family of four down for a half hour visit to see me. Using video conferencing, I can offer a proper opinion, very quickly, and with good face-to-face engagement.”

High quality wireless networks are not just enabling improved communication with patients. At Nottingham University Hospitals Trust, a major upgrade to IT



infrastructure made it possible to introduce Nervecentre, which provides a workflow management system which has greatly improved staff communication. Services that have benefited include the Hospital at Night scheme (see case study, overleaf).

Previously, all contact between members of the H@N team had been via pagers and landline telephones, with negative consequences for staff satisfaction and patient care. Now, however, the trust has a solution based on wireless phones and both desktop and tablet computers. The H@N coordinator is aware of the location and workloads of all team members at all times and can easily reach them on the phone.

“My favourite element of these projects is the idea you actually increase human interaction,” says Paul Cook, the Cisco account manager for Nottingham.

“The trust has recently extended the wireless phones to porters and the theatre staff have admitted a few times that they used not to see porters as individuals and perhaps did not respect them as such.

“But now the porters are carrying phones

‘A radio frequency identification (RFID) system makes it possible to track assets such as wheelchairs to an accuracy of two metres’

and you can search for an individual porter by name, and you’d have to be quite an arrogant person to interact with someone directly and not get to know them. They’re co-workers and suddenly individuals have all kinds of professional relationships that didn’t previously exist.”

The changes at Nottingham have also resulted in significant financial benefits, outlined in two reports by The Association of Chartered Certified Accountants. ACCA estimates that the Hospital at Night project alone will lead to real cash release savings of around £105,000 a year and the reinvestment of approximately £323,000 into patient care.

“I don’t think it’s over ambitious, if we were able to address absolutely everything, to save several percentage points out of the trust’s annual £750m budget,” says Mr Cook.

“For me it is now impossible to be a credible doubter about this,” he continues. “Everybody has to understand that, provided they are managed professionally, IT systems and solutions do work.” ●

TECHNOLOGY: CASE STUDIES

THE ONLY WAY IS UP

How the network going down at Great Ormond Street Hospital at Night in Nottingham proved to be a blessing in disguise – and rethinking

GREAT ORMOND STREET HOSPITAL FOR CHILDREN FOUNDATION TRUST

A major network outage does not sound like the best welcome for a new head of ICT. But Mark Large says that in many ways he was “the luckiest IT director around” when he joined Great Ormond Street Hospital for Children Foundation Trust back in 2008.

Why? “Because there was a clear challenge. I had to fix things that very clearly needed repairing and upgrading,” he explains. “There was an understanding that we couldn’t carry on the way we were and that we were in a situation where the infrastructure definitely needed upgrading.”

In the run-up to his joining the trust, the issues being caused by its ageing IT systems had become increasingly clear and increasingly troublesome. Basic IT infrastructure problems had made it impossible, for instance, to replace the hospital’s outdated picture archiving and communications system (PACS) and an e-prescribing system had faltered due to problems with the wireless network.

The board decided something had to change, and part of that change was Mr Large’s appointment – the trust had never previously had a director of ICT. Mr Large had spent most of his career outside the NHS, much of it working in technology companies specialising in performance, architecture and strategy – a background that was to prove invaluable.

“My role at GOSH has been a lot about strategy; a lot about architecture and a platform approach,” he explains. “We had to stabilise all the various layers of the infrastructure – the network, the server room, the storage, the wireless system.

“By investing heavily in that we’ve given ourselves a platform – Cisco Network Architecture Blueprint for the NHS – from which we can do most things without having to change our architecture or

reinvest in technology. Previously the IT department was operating in firefighting mode. Now we’ve moved to an open-for-business type attitude where we try to make the answer ‘yes’ wherever we can.”

The ability to introduce new IT systems is arguably of particular importance at a tertiary paediatric hospital. “We’re caring for the digital generation,” argues trust medical director Professor Martin Elliott.

“Recently I was in my clinic talking about a particular operation to a parent and an eight-year-old child. The child was very quiet, playing on an iPad. And I turned to him and said: ‘Did you understand everything that’s been said? Have you got any questions?’ and he said: ‘Oh, no, I’ve been looking up the operation. I can see how it’s done. It’s really good and the results look good’”

“Some of the kids that come to us are probably streets ahead of us on use of consumer technology,” adds Mr Large. “We need to try and think more like they do, providing services that can more easily use. We will not overtake them but we will at least try to keep up with the way they interact with technology.”

Collaboration is critical to doing that, says Mr Large. Cisco helped develop and deploy the network improvements that made it possible to replace the PACS system, get the e-prescribing system working properly, and introduce a range of new systems including improved video conferencing in theatres and seminar rooms that enable clinicians around the world to observe surgical interventions and other treatments.

Cisco’s TelePresence Content Server and Media Experience Engine allow invited users on any device, anywhere in the world, to join a video conference safely and securely and to share documents and images.

But for everyone at the trust, this is all about the patients. “My title is director of



‘Some of the kids are streets ahead of us on use of technology. We need to try and think more like they do’

ICT but I take my contribution to the patient’s wellbeing and experience in the hospital very seriously,” says Mr Large. “At the end of the day if our systems aren’t working properly that will impact patients very quickly.”

Professor Elliott agrees. “There’s no point in being in healthcare if you don’t care about patients. Great Ormond Street’s motto is: ‘The child first and always’, and we would expect anybody working here to have that tattooed on their forehead almost!”

“So if you put yourself in that empathetic position then you cannot be a clinician or a nurse and not be interested in the IT and nor can an IT department make changes without engaging you.”



Network rebuilt: Great Ormond Street has invested heavily in IT infrastructure

doctor's pager went off four times," remembers Mr Fearn. "So this poor old lady's assessment didn't finish until well after midnight. Each time the junior doctor came back he had to wake her up."

Following a major upgrade of the trust's basic IT infrastructure "things like that simply don't happen any more," says Mr Fearn.

Doctors on the H@N team now have BlackBerrys that work on the trust's upgraded network. The coordinator sends alerts to these phones with clear indications of what the job is, where it is, and how urgent it is. Should the doctor be in the middle of another task, he or she can decline the job and it can be assigned to another member of the team.

"What that means is that we don't get patient care interrupted," says Mr Fearn. "It also means the noise level's reduced significantly in the wards at night – the bleeps aren't always going off."

Since the Hospital at Night coordinator can now assign tasks from a tablet computer, the new system also means that he or she is no longer spending a major part of the shift sitting behind a desk. A report by the Association of Chartered Certified Accountants shows that in the week of 14 March 2010, the Hospital at Night coordinator was not able to leave the office once. A year later, following the introduction of the new system, the coordinators spent an average of 60 per cent of their shifts delivering direct clinical care on the wards.

The benefits of the new system have been far reaching. Mr Fearn highlights the reduction of information governance risks thanks to junior doctors no longer recording their tasks "on the piece of paper in their pocket" – not just unsafe for patient care but also less than ideal as evidence for their training record.

"We're now able to give them that information in a printed off report direct," says Mr Fearn. "And if they need to increase their numbers in a certain procedure they can ask the Hospital at Night coordinator and they can direct them to do it. So it means their training is more effective."

Mr Fearn stresses that none of the improvements would have been possible without the IT infrastructure upgrade.

"The idea was if you can build a reliable platform that you can use again and again then that's where the investment is going to pay off," he explains. "We then looked at technology we could use in a variety of places, such as wireless telephony and the workflow management system. If you've got that basic building block of a high quality network in place then you can exploit it to its full potential." ●

NOTTINGHAM UNIVERSITY HOSPITALS TRUST

The role of a Hospital at Night coordinator is a demanding one. Responsible for ensuring that patients receive the care they need during the long nighttime period, coordinators must manage medical review requests from ward staff and then assign those requests to the small team of junior doctors on duty.

It can be a tricky job at the best of times but at Nottingham University Hospitals outdated technology was making it even more challenging. Communication between members of the team was entirely by landline phones and what Andrew Fearn, the trust's director of ICT services, characterises as "an ancient bleep system".

"It meant that 97 per cent of the time, the Hospital at Night coordinator was in an office looking at a computer screen, or on the telephone sending bleeps out and receiving calls back," says Mr Fearn. "We were finding it incredibly difficult to recruit coordinators because these are senior nurses and, as you will appreciate, they want to do

nursing, they don't want to do administration."

The situation was not much better for the junior doctors receiving the bleeps. Their pagers were unable to offer any indication of how urgent the job was and so they simply had to stop what they were doing and find a phone as quickly as possible. That meant knock-on consequences for patient care.

"There was one occasion where an elderly patient was brought into the hospital at about 11.20pm. She was seen by the junior doctor within five minutes to do the initial assessment but during that assessment the



Night shift: Nottingham's IT has been transformed