

Hospital Accelerates Digital Transformation



Great Ormond Street Hospital creates new patient-centric collaboration model.

EXECUTIVE SUMMARY

Customer Name: Great Ormond Street Hospital

Industry: Healthcare

Location: London, United Kingdom

Number of Employees: 3500

Challenge

- Stabilize and improve network
- Create platform to transform clinical systems with improved communications and video

Solution

- Network stabilized and then improved to create platform for transforming clinical systems with unified communications and video-based

Results

- High-performance platform with 99.9999 percent availability
- Greater access to medical data, clinical applications, and collaboration tools
- Improved operational efficiency and patient care

Challenge

Founded in 1852, Great Ormond Street Hospital (GOSH) is an international centre of excellence dedicated to pediatric healthcare and research into childhood illnesses. Operating from a single site in central London, it treats over 192,000 children a year, most of whom have been referred from other hospitals throughout the United Kingdom and overseas. It employs 900 nurses and 350 doctors, working in more than 50 different clinical specialties. The hospital is currently undertaking a major transformation program to improve the quality of patient care, focusing on three strategic goals: “No waits, no waste, no harm.” Everything the hospital does is driven by the principle: “The Child First and Always.”

When Mark Large took over as IT director at GOSH in 2008, he inherited a network infrastructure with significant problems. “On my first day, we were dealing with a hospital wide network outage that lasted two and a half days,” he says. “There was another major failure within a few weeks. Clearly we were in a very bad place.”

Inadequate IT investment and management over a number of years resulted in poor Local Area Network (LAN) availability and performance. Worse still, these problems affected other clinical applications. For example, a wireless LAN had been installed to support the introduction of electronic prescribing. However, the coverage provided by 200 access points was patchy, and during LAN outages, it was necessary to revert to a paper-based system with the risk of patients’ prescribing records becoming fragmented. A lack of IT support contracts and multivendor relationships compounded the situation. Even between identical switches, variations existed in software code versions.

Moreover, the network challenges prevented the hospital from adopting new technologies for improving care and efficiency. “Our vision is to be a digital hospital; one that’s paperless and collaborative, offering the highest levels of care

and operational efficiency,” says Professor Martin Elliott, co-medical director for GOSH. In addition, the new IT environment had to be both open (to optimize collaboration) and secure (to support the ability for staff to use their own mobile devices onsite, a key challenge facing many hospitals).



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Professor Martin Elliott
Co-medical Director
Great Ormond Street Hospital



Solution

To help analyze the challenges, identify strategies, and accelerate change, GOSH worked with the Cisco Internet Business Solution Group (IBSG). “Cisco IBSG helped us develop transformational ideas and best practices,” says Elliott. “They presented Cisco’s vision for Connected Health, which aligned exactly with how we wanted to put the needs of children and families first. With Cisco, we got a trusted advisor and an end-to-end architecture that works together and delivers on its promises.” added Large.

Following a detailed audit of the GOSH network Cisco recommended a two-stage approach:

- Phase One: A six-month network stabilization program to address urgent issues in the hospital’s existing network infrastructure
- Phase Two: A nine-month strategic technology refresh to create a fast and highly available platform based on the Cisco® Network Architecture Blueprint for the NHS (C-NAB). The blueprint provides templates for all aspects of healthcare operations, ranging from networks in acute and primary care, through to the data center and unified communications.

“Cisco® Network Architecture Blueprint for the NHS gave us everything we needed: a resilient, ultra-fast, multimedia network with 10 Gbps in the core and 1 Gbps at the edge,” says Large. “Our Service Level Agreement (SLA) guarantees four nines (99.99 percent) availability, but we’ve actually achieved greater than six nines (99.9999 percent). And we completed that project two months ahead of schedule.”

The network modernization only tells part of the story. Building on this solid foundation, GOSH was able to accelerate plans for unified communications and collaboration, deploying IP telephony throughout the hospital using Cisco Unified Communications Manager.

“Cisco Unified Communications Manager helped accelerate our strategy for voice-over-IP, video, wireless, and RFID,” says Darren Burne, head of infrastructure and operations for GOSH. The Cisco Unified Communications Manager deployment supports 2200 Cisco Unified IP Phones and 600 Cisco Unified Wireless IP Phones, as well as providing a host of additional enhancements.

The ability to create Session Initiation Protocol (SIP) connections has completely revolutionized communications at the hospital. SIP integration means that, in addition to helping ensure reductions in call costs through the use of the campus network, staff can use the one device that best meets their needs rather than carry around multiple devices. BlackBerry devices equipped with RIM’s MVS (Mobile Voice System), in conjunction with Cisco Unified Communications Manager, provide a very intuitive and integrated environment that helps enable staff to have four-digit dialing and free calls over the wireless LAN.

Having a solid network base has also enabled the hospital to advance its electronic x-ray and prescription systems. GOSH is now running a brand new PACS over the network, after a large scale migration having been one of the first Trusts in the U.K to have a PACS system. Renewing front-line systems and completing projects that require massive data migration are much easier. In the case of the picture archiving and communication system (PACS), the network helps enable a very fast viewer to every desktop. Email is another prime example of IT agility. As part of a systems upgrade, GOSH migrated 2.65 billion messages in less than three months.

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Mark Large
IT Director
Great Ormond Street Hospital

GOSH also has a platform that integrates video and mobility with clinical and operational processes, allowing caregivers to bring e-prescribing and electronic note-taking right to the bedside, for example.

The new WLAN has been used to deploy radio frequency identification (RFID) asset tracking. So far, GOSH has fitted 950 pieces of medical equipment with electronic tags, including wheelchairs, infusion pumps, beds, and specialist cots. The system tracks the location of these high-value items to within two metres anywhere in the hospital, making it one of the most accurate asset-tracking deployments in the United Kingdom.

Video collaboration with Cisco TelePresence® is a key part of the hospital's transformational strategy. Using the hospital's previous video conferencing system, members of multidisciplinary teams attempting to join the same video conference reported connectivity problems during the session and poor user experience.

“Cisco TelePresence Content Server accompanied by Show and Share changes everything,” says Large. “It means we can discuss specific cases, share medical records, and agree on the best approach for particular patients, in HD quality, face-to-face, as if they were there in person and with total security.”

Cisco Media Experience Engine (MXE) takes care of watermarking and format conversion of videos for different audiences and devices. This technology allows GOSH to make content universally available, whether inside the hospital itself or shared privately and securely with peers across the globe. Medical staff can watch it on demand on any device, whether Cisco Cius™ tablet, iPad, laptop, or otherwise.

Results

The transformation has been spectacular. It is much easier for medical staff to share detailed information with patients, their families, and the people looking after them, wherever they are in the world. For example, a clinician can use a tablet to watch recordings of operations, participate in multidisciplinary meetings, share visuals such as x-rays, or pull up a presentation. Laptops are loaded with Cisco Jabber™ for TelePresence client, so that the clinicians can set up Cisco TelePresence sessions in real time.

“We had a recent case where the patient was having a complex operation using new techniques,” says Elliott. “Using TelePresence, I was able to talk the patient and parents through the procedure, step-by-step, raising their confidence, putting them at ease and enhancing the overall patient experience.” Like all hospitals, GOSH is always looking to save costs and time as well as improve operational efficiency. Instead of everyone travelling to Leeds once a month, the hospital's board members now meet over Cisco TelePresence.

GOSH is moving to a more agile and effective collaboration model based on Cisco Show and Share®. “It's great for improving management of video content, but the real value comes from the way that Show and Share will allow clinicians to share live and recorded video—anytime, anywhere, from any device—iPad, iPhone, laptop, or digital signage,” says Large. “The addition of Cisco TelePresence Content Server to our infrastructure recently will provide video-on-demand and take sharing of clinical knowledge and best practice to the next level.”



The barriers of distance and time have also been removed. “We partner closely with pioneering hospitals in the United States, such as the Cincinnati Children’s Clinic,” says Elliott. “Where it is appropriate to do so, we can set up a Cisco TelePresence session, often providing the patient with a faster response and avoiding the need to fly consultants to the U.S. Also, Telepresence opens up new ways to deliver healthcare remotely, increasing inclusion for example in hard to reach areas.”

The hospital is also able to respond better to emergencies. For example, as soon as a Children’s Acute Transport Service (CATS) administrator receives an emergency referral from another hospital, using the Cisco Communications Manager Attendant Console, he or she can instantly transfer the call to a MeetMe and bring in the lead consultant, drivers, and medical staff required to attend in the back of the ambulance. Likewise, they make sure the necessary specialists and medical equipment are on hand prior to the ambulance arriving.

In addition, GOSH has added Cisco Unified Contact Center Express functionality to make sure it never misses a call. “We’ve streamlined appointment bookings and now offer the option of a call back,” says Darren Burne, Head of Infrastructure and Operations for GOSH.

By enabling SIP trunking, Cisco Unified Communications Manager has helped eliminate problems associated with mobile coverage, while reducing call charges for 300 BlackBerry users. “We’ve also used SIP trunking to integrate audio conferencing with our existing video systems,” says Burne. “And we’ve created a voice virtual private network, extending four-digit dialing and all the normal telephony features people enjoy in the office.”

GOSH is also embracing the bring-your-own-device trend, allowing staff to use their own smartphones and tablets. The hospital’s IT team recognises users as they pass through the hospital and uses policy management to specify what they see.

And GOSH is already planning the next stage of its transformational journey. “Clinicians working in theatre could hit a button and video surgical procedures in HD,” says Elliott. “That content could be broadcast live, say, into lecture theatres, and also recorded for later playback and learning. It’s even possible to convert the surgeon’s commentary into searchable text and search video by keywords to roll the clock back and review procedures

That’s vital from both a patient safety and training perspective, and to offer new insight that’s simply not there at the moment.”

For More Information

To find out more about Cisco Collaboration Architecture, please go to: www.cisco.com/go/collaborate

To find out more about Business Video, please go to: www.cisco.com/go/video



Product List

Routing and Switching

- Cisco Catalyst® 6500 Series Virtual Switching Supervisor (VSS) Engine 720
- Cisco Catalyst 3750E Series Switches
- Cisco Nexus 7000 Series Switches

Data Centre

- Cisco Nexus® 5000 Series Switches
- Cisco Nexus 2000 Series Switches

Video

- Cisco Media Experience Engine (MXE)
- Cisco Show and Share
- Cisco TelePresence MCU
- Cisco TelePresence Content Server
- Cisco Telepresence Management Suite
- Cisco Video Communication Server (Control and Expressway)

Unified Communications

- Cisco Unified Communications Manager
- Cisco Unified Enterprise Attendant Console
- Cisco Unity® Connection
- Cisco Unified IP Phones 7900 and 6900 Series
- Cisco Unified Wireless IP Phones
- Cisco AnyConnect for IP Phone
- Cisco Jabber for TelePresence

Customer Collaboration

- Cisco Unified Contact Center Express

Wireless

- Cisco Unified Wireless Network
- Cisco Aironet® 1140 Series wireless access points
- Cisco Clean Air wireless access points
- Cisco 4400 Series wireless LAN controllers
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