# Barts Health NHS Trust

The journey so far...

BLOCK

# Barts Health NHS Trust

Barts is one of the largest NHS Trusts in England, running five different hospitals across the City and East London. The group delivers world-class Acute and specialist care, as well as community services, to the local area. The five hospitals, united under the newly created Barts Health umbrella in 2012, include Britain's oldest, St Bartholomew's.

The merger left the five sites disparate clinical systems and no centralised networking infrastructure, making it difficult for staff to work across sites. This amplified the existing IT challenges and created barriers to meeting their ambitious goals.

How does one of the UK's largest NHS Trusts build a modern digital infrastructure and networking foundation across five different hospitals?

# Tell us where it hurts

Block was first engaged in 2013 to conduct an independent assessment of the physical environment, the IT infrastructure and maturity of network service across all main sites.

## Assessing the environment

**17**
**minute**
average login times, negatively impacting user experience and staff satisfaction.

**24**
**hours**
plus to resolve recurring incidents, consuming the majority of the service desk's

**11**
**minute**
call waiting times for the IT service desk before a resolution could even begin. This was compounded by repeat incidents.

### The bigger the Trust, the more complex the challenge.

Block's initial programme of consultancy work identified potential improvements in a number of key areas:

- Staff mobility
- Desktop logon
- Email
- Networking reliability and speed
- Access to clinical systems
- Active Directory
- Datacentre performance
- Service desk
- Comms room remediation
- Single points of failure

These improvements were then prioritised as 'Now', 'Soon' and 'Should'.

FIRST CONTACT

BLOCK

# Enhancing the user experience

We began with a single hospital, Whipps Cross, with a focus on improving the user experience. We specifically looked at these work streams:

- User profiles
- Active directory
- Email and exchange
- Current process
- Desktop migration
- Network and server infrastructure status

## Whipps Cross Hospital – Get well

The Barts and Block teams came together to look for quick wins, laying the foundation for future transformations and securing early buy-in from all those affected.

The most obvious place to start was the service desk, most of whose time was taken up with repeat issues. We decided to focus on resolving this first, quickly delivering a significant programme of work to demonstrate that once you decide to address a key issue, visible benefits soon follow.

The next step was to install a stable infrastructure, ready or the new technology that would further enhance the user experience.

Here are some examples of what we achieved together:

- Created and implemented a brand new Service Policy, including monitoring and event management, and monitored adherence;
- Removed single points of failure within the network, applying best practice and configuring optimal routing;
- Applied best practice configuration to Microsoft Exchange, migrating appropriate mailboxes;
- Identified and resolved application compatibility issues, developing a migration process for implementing Windows 7 desktops with minimal user impact.

**90 seconds**
Average time-to-answer reduced from 11 minutes to 90 seconds – all delivered without additional operators

**73 percent**
Less calls each month to the service desk

**40 seconds**
User login wait times of around 17 minutes to just 40 seconds

**650 days**
Resulting in a saving of 650 days per year

PROJECT KICK OFF

# WannaCry ransomware

The global ransomware attack infamously known as WannaCry hit NHS Trusts across the United Kingdom on the 12th of May 2017. As a trusted partner, Block was contacted to support with resolving the situation at Barts.

## Emergency measures

The joint approach between Barts and Block ensured that the Trust's services were back up and running as swiftly as possible.

The experience enhanced the relationship and understanding between both parties, and understandably acted as a catalyst for the future development of Barts' IT and networking strategy.

The critical nature of the health and care services at Barts required a lightning quick response.

Within 48 hours, a 20-person team led by Block CEO Marc Chang had been deployed on site, operating at Barts for what evolved into a four-week period.

THE CATALYST

BLOCK

# Future proofing the architecture

Following the aftermath of WannaCry, Barts developed a digital strategy that highlighted relevant technology investment needs in four key working areas:

- Cloud and application hosting
- Network and unified communications
- Service desk
- End-user devices, mobility, and virtual platform

## Investing in the foundations of a world-class network infrastructure

One of the key goals of the Trust's digital transformation ambitions was to establish a robust underlying infrastructure, capable of enabling high-quality, digitally-driven clinical care. This would serve as the foundation for both the Trust's clinical and operational activities.

Establishing a resilient, reliable, scalable and flexible technology infrastructure became the focus of the network and unified communications workstream.

"In order to enable high-quality, digitally driven clinical care as part of the Trust's digital transformation ambitions, Barts needed to establish a robust underlying infrastructure."

Charles Gutteridge,
CCIO at Barts Health NHS Trust

STRATEGIC INVESTMENT

# Delivering the foundation for exceptional care

Supporting digital innovation at the pace and scale that Barts were driving for meant that they needed a health IT network that was more robust, easier to manage and future-proofed. What's the point of best-in-class clinical applications if the underlying infrastructure impedes their performance?

## Future Ready Networks

The mission was to deliver a highly robust, medical grade network architecture that could support the deployment of a wide variety of mission-critical digitised services without compromising the robustness and reliability of the network.

Block's industry-leading campus networking solution, based on Cisco SDA technology, was developed with clinicians and healthcare technology leaders to deliver the full suite of capabilities for today's digital hospital.

Our extensive real-world deployment experience within large healthcare environments, coupled with the expertise within the Barts team, meant that we were uniquely positioned to collaborate around the integration of medical devices, applications, security and Internet of Things (IoT), and together ensure that the network drives innovation rather than delaying it.

Barts took the opportunity to go further than just a refresh, taking an entirely new approach to the design of the network. It's all based on a software-defined architecture, allowing them to benefit from:

- **Better visibility and control**
  The IT team can centralise control, automate management tasks and use APIs to interface with applications;
- **Reduced security risk everywhere**
  The network now acts as a sensor, with security policies enforced dynamically as users and devices move around;
- **Increased efficiency, simplified automation**
  New applications and devices can be deployed in minutes; changes can be simply rolled out using best practice templates;
- **New ways of working**
  Simple and secure deployment of digital health and care technologies and IoT will allow Barts to continue to innovate and transform care.



BLOCK

# When your core is strong, everything else follows

One of the ICT Objectives defined in the trust's digital strategy was to improve availability, reliability and resilience across IT. In pursuit of this goal, we've worked with the Barts Health team to deliver a comprehensive overhaul of their wired network. This initiative involved the implementation of a robust Cisco SDA network, ensuring high availability, across their five primary campuses and ten remote sites, with Network Access Control, and extensive macro and micro segmentation implemented trust wide.

## Simple and Powerful Management

- Cisco Catalyst Centre (formerly DNA Centre) is a powerful management system that leverages AI to connect, secure, and automate network operations. The solution has been deployed to configure and manage all sites, helping to design, deploy, and manage the networks at pace with features such as auto discovery, zero-touch provisioning, and configuration automation.
- Mobility is required for 100's of devices on 100's of legacy subnets which traditionally required manual service requests. Now Block AutoPort re-configures ports on-demand using the Catalyst Centre API and ensures best practice port configurations are always applied. This also includes ITSM integration which has increased service levels to 24/7 and reduced tickets by 30%.
- Quality of experience is monitored across the network using Cisco ThousandEyes and Block's Axiom dashboard. These are the first port of call when performance issues are raised and allow the service teams to quickly ascertain when there are application or network issues.

"Having one network infrastructure throughout the hospital and across sites is a huge benefit. You're not reinventing the wheel or having to redesign something in every location or with every piece of tech. We now have defined policy that allows us to cater for what we have now, what you had in the past, and what we'll have in the future, we're now truly able to grow as we need to, at pace and scale."

Fay Stevenson, ICT Director, Barts Health NHS Trust

# The Nightingale Hospital

With the partnership already well established between Barts and Block, both organisations were able to mobilise together in the fight against the virus.

## When the mission is critical and the need is now

The centralised strategy and architecture put in place across Barts allowed Block and our sister company Connect-IP to get involved from the off, understanding the requirements of these new Nightingale facilities and able to deliver at speed.

The project balanced the provisioning of largescale IT infrastructure with the requirements and nuances of an NHS digital hospital, that potentially needed to operate 24/7 – all at an unprecedented pace. Supporting Barts in this manner is just another example of the strength in partnership and mutual trust that exists between both parties, allowing us to work closely together for the greater good.

"I think the single greatest achievement of the doctors and nurses there was that ICNARC, which is the National Audit of ITU outcomes, found the Nightingale mortality as exactly the same as the national average – so for the patients that we treated, in a conference centre, with teams assembled from all over the place, in a completely foreign environment, to have achieved an average outcome is an astonishing achievement."

Professor Charles Knight OBE,
Chief Executive, Barts Health NHS Trust
paying tribute to the Nightingale Hospital

A GLOBAL PANDEMIC

"Block has worked exceptionally hard to help our ICT teams get the critical IT infrastructure up and running at NHS Nightingale London. The sheer will, determination and knowledge of each team member has been outstanding. We fully realise we would not have been able to do this on our own without each of the people you have dedicated to our deployment. We still have a huge amount of work to do, and we will complete all of it with partners like Block by our side. We really appreciate the way our two teams have jointly solved problems and gone the extra distance knowing that patients and clinical staff depend on the systems we build for them."

Charles Gutteridge,
CCIO,
Barts Health NHS Trust

BLOCK

# Wireless innovation

Following the wired network refresh the next step was to tackle the wireless network. The wireless network is a critical component of care delivery at Barts Health. It's not just about giving internet access to PCs and patient devices, wireless devices are currently in use throughout the hospital, for example; PDAs used by nurses at the bedside; tablets used by physicians in the Emergency Department, sending ECG results directly to the patient record; electronic prescribing; imaging carts and blood gas analysers; the list goes on.

## A Critical Component for Care

As so much relies on the wireless network Block always strives to be agile, working within the constraints of a 24/7/365 hospital environment, yet deploying at pace and scale. Here are just two examples of deployment scenarios that we supported throughout the wireless refresh:

- **Royal London Hospital** – Wireless phones were in use across the site, so to minimise disruption Wi-Fi needed to be rolled out quickly. Block had a team of five engineers support the Barts team, and in less than a week completed rollout across three tower buildings and 17 floors.
- **Whipps Cross Hospital** – The trust had an ambitious target deadline to implement an electronic Prescribing and Medicines Administration (ePMA) system, Block adapted our project plan to prioritise the wireless deployment in 34 wards to enable access for the required go-live date.

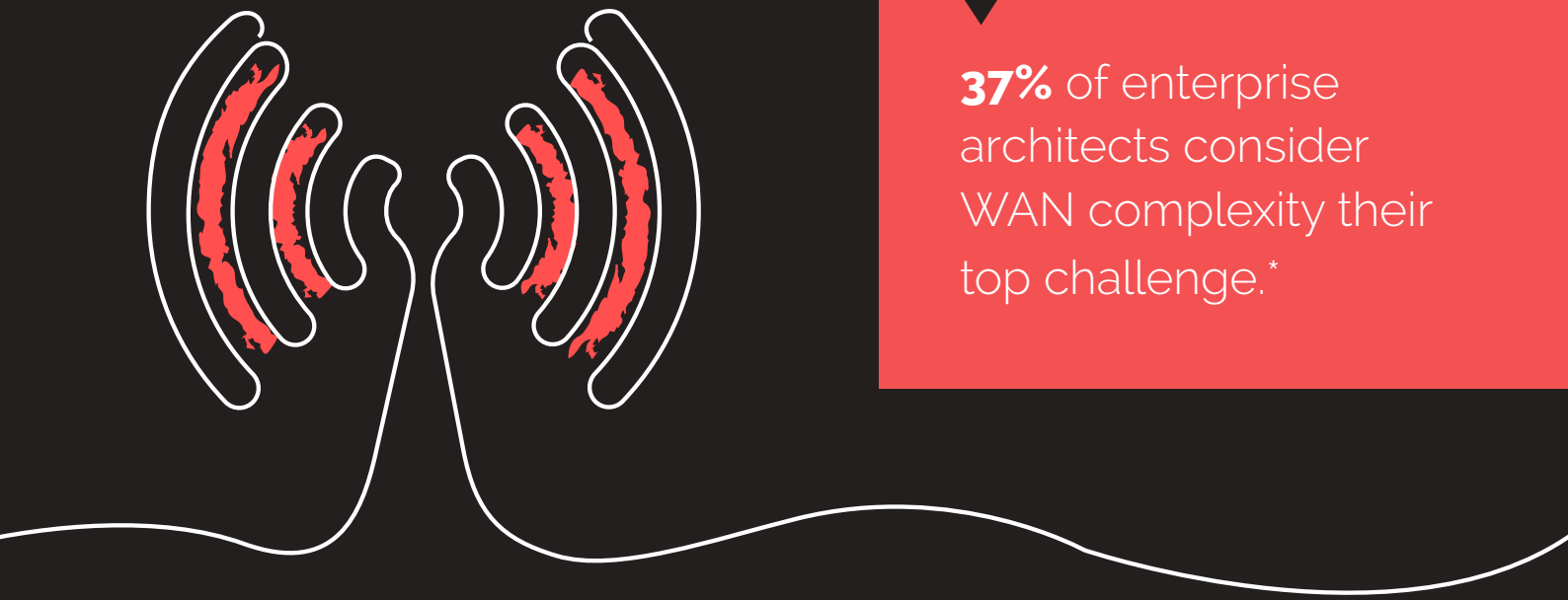
> **"The wireless network is at a point now where we can do an upgrade without taking down the network, so users can carry on working, which at the end of the day equates to improved patient care.**
>
> **The work that we've done on the network has definitely given the nurses and the doctors and the people working on the wards a much more stable network and more reliable platform for them to work. This improved wireless means we can now look at implementing Bluetooth location tracking across the hospital."**
>
> Ian Lyon, ICT Network and Security Manager, Barts Health NHS Trust

FURTHER DIGITISATION

# Connectivity across sites

Following a successful trial in the pathology department, Barts has invested in strategic WAN connectivity, using Cisco SD-WAN technology to provide greater options, flexibility, and security for connectivity between sites and to the cloud. In some cases, the Trust has had to quickly set up new locations, like the Covid-19 vaccination centres. SD-WAN made this fast, easy, and secure.

As the world rapidly adopts a cloud-first strategy, the IT landscape has changed. Enabling secure access to applications wherever users are is a priority. While delivering speed and agility, the multi cloud environment creates challenges such as an expanded attack surface and less control over the user experience. Cisco SD-WAN helps you address these issues by simplifying network management. With a single WAN fabric, all policies and configurations can be centrally managed. As a cloud native WAN overlay, Cisco SD-WAN ensures application performance and adapts to changing conditions, whilst providing full-stack multilayer security capabilities for both on-premises and in the cloud.



**37%** of enterprise architects consider WAN complexity their top challenge.*

*SD-WAN and SASE: The new landscape of networking, Cisco, 2023

# Protecting users, reducing risk and building resilience

Keeping data safe is paramount, and that doesn't come from one bit of technology, it comes from several stacks of technology working together. The key is understanding how these technologies can work together to protect the users and the environment, whilst allowing care teams to deliver patient care without hindrance.

## Segmenting the network

Securing an environment is a constant challenge, the threat landscape is constantly evolving, and unfortunately, healthcare organisations find themselves targeted by threat actors every day. Block has been supporting the trust on the security journey in the following ways:

- **Network Access Control (NAC)** – Using Cisco ISE to ensure all devices connecting to the network are correctly identified, authenticated and granted access wherever they move to.
- **Posture Checking** - After authentication, managed devices are subject to a posture check using Cisco AnyConnect to check for the correct OS and anti-virus updates.
- **Micro-Segmentation** - Authenticated and compliant devices such as medical devices, PC's, printers and Access Points are then given a Security Group Tag (SGT) according to central TrustSec policy.

"Our vision for the health and social care sector is for it to be resilient to cyber attacks, minimising the impact on patients and making them safer and better cared for. Cyber threats are always present and constantly evolving, so digital health and care organisations must remain prepared and ready to respond. Cyber must always be managed as a risk and a unified and collaborative approach is key to improving cyber security across the health and social care sector."

Mike Fell, Executive Director of National Cyber Operations
NHS England

# Measurable results

Block and Barts have worked closely together to implement multiple service enhancements, whilst proactively removing significant risk from the legacy network estate.

## Faster time to value

The key goal of the network refresh was for Barts to be able to roll out new applications and systems faster and more securely. The overall aim was enhanced support for the clinical departments by simplifying the management and operational aspects of such a large network.

"Barts is already seeing a host of positive changes from working together with Block on our Trust-wide digital transformation. You can feel it on the ground, in patient feedback and staff morale, but for me the best thing is it's all measurable via the network dashboard, where the whole team can see at a glance the upgrades in stability, reliability and security across the board."

Fay Stevenson,
Deputy Director of Informatics
Barts Health NHS Trust

THE IMPACT

**64%**
**decrease**

64% decrease in cost per IT deployment through Cisco DNA Centre automation

**100%**
**less**

100% resolution of P1 and P2 incidents covering all high priority and critical incidents, evidence of a highly responsive managed service

**80%**
**decrease**

80% decrease in manpower days for rollout of a major new service or system affecting > 500 users or devices

**100%**
**availability**

100% availability of network access, measured over one month for the access layer, up from 97.5% when the project began

# The journey continues...

block.co.uk