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CASE STUDY

UNITED
KINGDOM

SECONDARY
EDUCATION

ENABLING CAMPUS-WIDE
DIGITAL LEARNING

The school set out to upgrade the
campus-wide network infrastructure
to future-proof capacity, strengthen
resiliency and reduce operational
burdens as a first step towards
modernising the entire school network.

Tomlinscote School is a shining light in England's education sector. Since converting to academy status in 2013, the school has been regularly over-subscribed. Tomlinscote, which caters for 11-to-16 year-olds, attracts pupils from across Surrey Heath.

"We have a restless desire to become even more successful," says Stephen Pink, IT Systems Manager, Tomlinscote School. "Our digital environment is a big part of our plans for today and for the future."

A GLOBAL CENTRE OF EXCELLENCE

Tomlinscote is an Apple Distinguished School, one of 532 worldwide, with fewer than 50 in the UK. This means every one of its 1,500 students has an iPad to support their learning. Teachers, too, work off laptops and iPads. The classrooms and the campus are digital learning spaces.

"We continue to see digital learning expanding. The challenge is to future-proof our network as best as possible," Pink explains. "Having a 1:1 iPad deployment, we need rock solid Wi-Fi everywhere."

The school's network was based on a 1Gb fibre backbone, with 1Gb Ethernet to endpoints going back to a single core switch in the primary server room. With mobile devices being used throughout the school, the capacity was being stretched. Pink wanted to upgrade the entire fibre and switching, with a 10Gb backbone: "We also wanted to standardise across the entire site with one vendor and a unified architecture."

REQUIREMENTS

- Underpin Tomlinscote's Apple Distinguished School status
- Provide robust backbone network for 1,500 students and 200 staff working from iPads
- Accelerate the transformation of the learning environment
- Upgrade the backbone network to support increasingly demanding workloads and mobile applications
- Establish a robust, highly available infrastructure

SOLUTION

- Aruba-6405 Core Switches
- Aruba-2930M Access Switches
- All redundant configurations
- 40G links between core switches
- 10G uplinks access
- 4-node cluster of HPE ProLiant Servers for all workloads
- Microsoft Storage Spaces Direct
- Google Apps, Microsoft 365, including Teams
- CCTV & VoIP

OUTCOMES

- Strengthens disaster recovery with fully redundant architecture
- Can now do hourly backups versus previous daily schedule
- Reduces operational effort required for network management
- Maximises network performance through 10Gb uplinks
- Future proof

CAPACITY, RESILIENCY AND MINIMAL HUMAN INTERACTION

The Aruba Edge Services Platform comprises 45 Aruba 2930M split into 13 edge stacks running off two Aruba 6405 Core Switches. This provides a highly redundant and robust network to a four-node HPE ProLiant DL385 with Microsoft Storage Spaces Direct cluster, as well as back-

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STEPHEN PINK
IT Systems Manager, Tomlinscote School

up servers. A 40Gb link between the core switches and the 10Gb uplinks not only provides a high level of headroom for the applications but also allows for faster and more regular backups.

Simplification in management and unification of the architecture have also been requirements which have been enabled here. The stacks of access switches and the virtualised core mean that each stack or the core are managed as a single IP instance, making management, upgrades and all other maintenance far simpler for the IT team.

The result is a network that can easily scale with high-performance stacking, multi-gigabit Ethernet and resilient PoE power, ideal for future Wi-Fi 6 deployments.

Standardisation with one vendor maximises budget value; the redundant core switches and the access layer were upgraded from the old design within just three weeks

during the 2020 summer holiday. The full design was provided by Aruba partner Elmdale IT Services Limited.

"The Aruba engagement gives us the capacity needed, with as much resiliency as possible, with minimal human interaction," says Pink. "Much of the network management is automated. We aren't required to do a lot on a day-to-day basis."

TURNING THE CAMPUS INTO A CLASSROOM

The Wi-Fi connectivity now extends to the sports fields and outdoor spaces, meaning teaching can continue out of the classroom. Eventually the plan is to blanket the entire campus while refreshing the wireless architecture. For now, the team is secure in the knowledge that the backbone of the network is solid and will allow the school to evolve the WLAN in the next step of its journey.

"Teachers can now present from anywhere, they don't need to physically be in the same room as the students. This would have been impossible without the Aruba backbone," says Mark Morren, Tomlinscote's Head of e-Learning. "Apple Classroom allows teachers to monitor every student's iPad. They can engage with students directly on a specific piece of coursework."

With Tomlinscote's digital capabilities already tested before the Covid lockdown, learning has been little affected. Teachers were comfortable creating videos, coursework was monitored online and feedback was naturally digital.

"Teachers have told me it was no different teaching remotely to teaching in the class. They can present, share material, answer questions, immediately," Morren says. "There has been almost zero lost learning."

DEVELOPING A COHERENT DIGITAL STRATEGY

Tomlinscote hasn't arrived here overnight. The unified Aruba LAN is not the start of the journey, nor is it the end.

"We decided in 2010 that all students should be able to work off laptops," says Morren. "At the time that was ground-breaking but it never lived up to expectations. Laptops were slow to start and not robust enough to cope with teenagers. It was only with the arrival of the iPad that we started to see the real opportunity around digital learning – and that we needed a coherent strategy."

Today, Tomlinscote works off Google Classroom, there is an online Digital Learning Centre containing instructions and FAQs, there are monthly meetings with Digital Champions from faculty and the student body and digital training twice a term. A host of course material is available to download within Apple Books; where possible, students have the flexibility to learn using written material or audio visual.

Tomlinscote and Morren also guide other schools looking to develop their own digital learning. The school is now part of The Prospect Trust and is sharing its expertise with others in the trust.

"Our vision as a school is 'developing confidence, enabling success'," says Morren. "And that applies to digital learning. There is no hard sell on the technology. Not everything needs to be done on an iPad. It is simply one other tool."

SIMPLIFYING THE DAILY MANAGEMENT OF THE NETWORK

"For me, the idea of the perfect network is one where you don't need to intervene. Everything is automatic. You don't have to constantly worry about security or reliability," says Pink. "We have that with Aruba."

Besides iPads, the network also supports more than 80 CCTV cameras, more than 90 VoIP phones and several network photocopiers. Long term, there is the option to add security controls and environmental monitoring. With much of the network activity now automated this creates more time for value-add projects. Pink is currently working on a new disaster recovery policy, with the speed of the new network having transformed back-up times.

"We can now do hourly back-ups, throughout the working week, where previously we only had them daily. This is in addition to daily, off network backups. This would not have been possible without the upgrade. It is now so hard to bring the network down."

The future, he continues, is the ability to drill down into specific usage by user or device. "We have 1,500 students and 200 teachers on multiple devices, all connected to the network on a daily basis. I want as much information as possible at my fingertips on how the network is being used and how it is performing so that I can identify any potential issues as soon as, or before they occur."

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