LET'S GET TO WORK ON

DIGITAL CLASSROOMS
Building the right foundations for the digital classroom of tomorrow

NETGEAR®
From nurseries to universities, a top priority for senior leadership teams, educators and IT leads is to develop ‘Personalised Learning’ environments, where individuals and their specific learning needs are fully supported.

‘With personalised and mobile-device based learning, it’s not just about replacing text books, pens or paper. It is about inventing new ways of learning and teaching, both individually and collaboratively’

As pedagogy undergoes change through wider adoption of technology, so too will the way IT is deployed to support lessons. Downtime of the wired and wireless network can stop a lesson dead in its tracks. Outages and inconsistent service are no longer acceptable and Educational IT services are increasingly being labelled as ‘mission critical’. As such, tomorrow’s digital classroom mandates that connections be supported by resilient, scalable networks that are adaptable to change.
NETGEAR’s vision of the ‘Personalised learning’ challenge

The ultimate goal should be for educationalists to realise an IT eco-system where technology is leveraged throughout the entire education process, the curriculum and the weekly timetable.

With thousands of customers around the world, NETGEAR brings intuitive solutions and choice to help address the different needs of early years, primary schools, secondary schools and academies through to colleges and universities.

“IT should not be a stage in the education process; a mere one hour lesson crammed into a busy week, but should instead be the way of education process.”
The emergence of trends including Bring Your Own Device (BYOD) and ‘flipped classrooms’ are changing how students learn, share and work with technology inside and outside the class. Reliable, performance based connections involve more than just the wireless network.

THE IMPACT OF WIRELESS ON THE OVERALL NETWORK

When looking at the IT network as a whole, it’s fair to say the wireless network is under more pressure to perform. Its primary role to interconnect mobile devices with users and prioritise as well as route traffic securely both internally and externally, is increasingly considered mission critical.

‘The need to understand the impact of mobility and personalised learning across the IT network as a whole, spanning switching, wireless, storage and security is imperative.’

As you explore the role for wireless for your students and staff, whether you’re just getting started, upgrading an existing network or expanding campus deployments, the need to consider wider network requirements is key to defining the type of wireless and switching backbone needed.

NETGEAR’s approach considers the impact of changing needs across the network. Faster devices, more apps, increased user connections and online collaboration are all demanding more bandwidth.
One step at a time

A key question to ask: Can your network take the wireless and BYOD demands being placed on educational premises these days? You may need to expand your existing network to cater for this. The key is to work through the components of your IT infrastructure one step at a time to ensure all your needs are met.

FOLLOW NETGEAR’S TOP TIPS TO GET IT RIGHT

DELIVERING A SEAMLESS, SECURE, WIRELESS NETWORK & EMBRACING MOBILE DEVICES

- Investing in the latest mainstream laptop or mobile device will help ensure that your network works to its full potential.
- Watch out for wireless interference: numerous devices can interfere with performance if on the same frequency.
- Make sure that your switches are fast enough for a new wireless system.
- Mobile and ‘bring-your-own’ devices demand more out of your network make sure you accommodate for this.
- Allowing users to connect to your network using any device, from any place, at any time requires 24/7 networking monitoring.

SUPPORTING GROWING NETWORK DEMANDS

- Just as broadband can differ in speeds available, so can switching products. For bigger network traffic demands, 10GbE switches may be needed to eliminate bottlenecks and improve performance.
- Are any of your servers virtualised? If so, 10Gigabit will be more important to have on your consideration list.

STORING, MANAGING & PROTECTING DATA

- Market indications point to data doubling every two years. As paper-free classes increase the need to be able to store, manage and retrieve data easily must also be met with the right security privileges and access rights.
- Make sure you choose a network infrastructure that includes backup capability as standard.

TABLETS VS THE LIBRARY AS PART OF THE DEBATE

- Consider 1,000 kindle books = ~1GB
- e-textbooks cost considerably less
- Initial expense and re-use; less wear and tear
- Less paper printed / reduce CO2 footprint
- Digital lessons / assignments only
- Tablets interactive, unlike text books
- e-textbooks updates: instant
- 1-2-1 customised learning and content
- Content shared collaboratively across multiple devices via the cloud
- 2 or 3 android tablets for the same price of 1 PC
LET’S GET TO WORK

DIGITAL CLASSROOMS IN ACTION
South Tyneside College welcomes thousands of students each year from the UK and overseas onto its further education courses and its dedicated marine school. As both a day and residential college, it understands the need for a reliable and scalable wireless network, having offered BYOD and guest network access on the campus for a number of years.

CHALLENGE

Craig Scott, Head of IT Services at South Tyneside College explains: “As with all education establishments, there is pressure to do more with less and improve efficiencies wherever possible. As part of an audit of IT facilities we identified that despite offering a PC for staff in each classroom as well as staff room offices, there were inefficiencies with PCs often sat unused. As a result we decided to invest in tablets for the teaching staff which provided a mobile option and could be used in all areas of the campus to provide a more effective and efficient resource.”

This change in hardware and addition of 230 devices inevitably put increased strain on the WiFi network. Coupled with year-on-year growth in usage of the network, the existing wireless solution did not provide the scalability or flexibility required to cope with the increased traffic or sustain future demand.

SOLUTION

NETGEAR’s ProSAFE WNDAP360 Dual Band Wireless-N Access Points combined the high performance required, at an affordable price point, with easy to use management and deployment features for straightforward installation and set-up.

Beyond the continued provision of reliable WiFi coverage, ease of management was key for Craig. NETGEAR recommended its ProSAFE WC9500 High Capacity Wireless Controller. As a scalable and centralised solution, this premium controller would support all access points, providing easy management and troubleshooting in the future.

It would also facilitate a straightforward set-up, something which was key for the college: “As an unplanned part of the project, we needed the new access points to be up and running within one month from identifying the right solution. Our courses can run during holiday periods and students from overseas stay with us during this time, so we cannot afford any downtime,” explains Craig.

The WC9500 was the ideal solution as it could handle up to 200 access points from the single device, not only suiting the current deployment but providing the college with the flexibility to scale by adding more access points at a later date.

RESULT

Performance bottlenecks have been eliminated, while coverage is reliable and robust no matter where you are on the campus or how many people are connected. “With our previous system, if more than 15 people were connected to a single access point, the system started to struggle with noticeable dips in performance. Now we can have 30 people connected to an access point at any one time with no problems.”

“The detail within the configuration settings is also greater than with our previous solution. This has allowed us to tweak how we offer wireless access to the end user and ensure we can easily manage access across our different networks – staff, student and guests – for a secure solution,” explains Craig.

Craig and his team were extremely impressed with the quick and easy installation of the access points and the management capabilities provided by the wireless controller. “The controller has been not only extremely valuable to help us meet our tight deadlines, but has provided us with enhanced capabilities and the opportunity to easily troubleshoot and identify any problems across the network from a single console.”

The scalability of the system means the college now has a future-proofed solution, which can cope with the demands of not just today but tomorrow and Craig has only received positive feedback from staff during the transition phase.

“We are currently only using 50 per cent capacity – this gives us the confidence and peace of mind that our network can grow as required.”

Craig Scott Head of IT Services at South Tyneside College
St Peter’s School puts mobility at the heart of its IT strategy with wireless technology

BACKGROUND

St Peter’s School is a coeducational secondary academy in Cambridgeshire which employs 140 staff and has over 1,000 pupils aged 11 to 18 year olds.

CHALLENGE

The prevalence of mobile and personal devices has forever changed the way that teachers teach and students interact and learn, but St Peter’s found itself falling behind the curve due to an ageing wired network infrastructure supported by a few, unreliable, unsecure wireless hotspots.

With ambitions to become a truly mobile education establishment, St Peter’s needed a solution that could bring greater mobility to both teachers and students. Teachers wanted the freedom to use learning aids on the network whilst away from their PCs, while students also had expectations of using their own devices at school to complement their studying – particularly at sixth form stage.

As such, the school wanted to embrace BYOD and offer students and staff the ability to use their own devices in school in a safe, managed environment. It also wanted to use more cloud-based and collaborative platforms in the future, so needed an up-to-date infrastructure to facilitate this.

However, with strict budgets and a vast campus to bring into the 21st century, ICT director of operations for the school, Jonathan Bowers, had a tough task to WiFi-enable the entire campus and ensure the security of all devices using the network.

“We now have confidence in allowing staff and students to use their own devices without compromising security and can realise the existing mobile assets we have within the school.”

Jonathan Bowers, ICT director of operations, St Peter’s School

SOLUTION

NETGEAR undertook a thorough site survey of the school to be able to pin point exactly what was needed and where access points should be placed. This vital, physical review of the campus and its buildings ensured that maximum wireless coverage could be achieved no matter where you are and that there are no black spots.

Due to the layout and building materials used on the campus, 74 access points were needed to ensure wireless access across the whole site, all of which can be centrally managed through two wireless controllers, guaranteeing reliable coverage and no unplanned downtime.

RESULT

In the first six months since the network upgrade, St Peter’s noticed a dramatic change in the role of technology within the classroom and beyond. The wireless network has no black spots, providing teachers and support staff with the freedom to use mobile technology to provide better teaching and support for students, regardless of where they are on the campus.

Students have also benefited hugely from the technology with an increase in sixth form students using their own devices to access learning aids and ensure they can work uninterrupted in a secure environment.

The WiFi network is paving the way for a dedicated “technology hub” for the schools top performers to enable them to exceed their potential through the use of technology to interact, learn and collaborate with others. Student support managers will be equipped with mobile devices to help them deal with situations as they happen, whether in the corridor, classroom or beyond. This will mean they can have immediate access to student records and the ability to record a conversation, send an email to a parent, record positive behaviour or issue a detention in real-time to improve efficiencies and productivity.
BISHOP HEBER HIGH SCHOOL

BACKGROUND

Bishop Heber High School serves students across South West Cheshire and currently has 1,000 pupils. Being at the forefront of technology provision for both staff and students plays a key part in helping the school achieve its vision, along with an understanding of the technical requirements to help everything run smoothly.

CHALLENGE

Like many other secondary schools across the country, Bishop Heber was keen to embrace new ways for teachers to deliver content to students, making lessons more engaging and informative. As such, presentations were becoming more multimedia-based, using video clips and online content. Storage of these large files (some up to 50MB each) was putting a huge strain on the existing data storage system, which was made up of plug-in USB drives and was fast reaching capacity. The way in which files were shared between teachers also needed reviewing, with staff using USB drives and laptops to store their presentations and emailing the large files to colleagues.

In addition, the school has also seen a big rise in the amount of other forms of data it needs to manage, including emails and media streaming. The resilience of the storage was also a cause for concern in the ICT department, with no back-up in place should servers (and disks) fail. Physical space and budget was also at a premium, so the department was reluctant to bolt on any more USB storage devices.

SOLUTION

The school needed a more cost-effective, scalable solution to meet its ever expanding storage needs. To ensure the right solution was put in place, NETGEAR conducted a site survey to assess storage needs. NETGEAR recommended its ReadyDATA 5200 product with a 180TB capacity and deduplication features.

RESULT

With the school’s storage needs rising from 1TB to 7TB within 6 years, the NETGEAR solution provides more than enough capacity to meet the school’s needs now and in the future. Back-ups are now happening more quickly and files are able to be restored with ease if accidentally deleted, without having to go through the back-up software. Staff can easily save and share data rather than having to email or transfer files via USB drives.

The IT team now have more time to focus on other aspects of their role instead of spending hours scanning and deleting duplicate files to free up space on the server. The deduplication facility means that this now happens automatically, and all that is needed is an occasional scan and delete of files that shouldn’t be saved on the school system.

“We’ve been very impressed with the quality and support of the NETGEAR team. They are extremely responsive; the transition was simple and painless. Following the switch over, things just worked, which is testament to the expertise of the team.”

Gary Naylor, ICT Network and SIMS manager, Bishop Heber High School
BACKGROUND

Founded in 1604, Blundell’s is a co-educational independent school for over 800 full, weekly and flexi boarding and day pupils from ages 3 to 18.

CHALLENGE

Over the last ten years, the school governors have invested heavily in IT to enable it to expand its ICT facilities available to pupils, teachers and support staff. There are currently over 600 computers connected to the school network. The facilities at Blundell’s School are centred around the purpose-built Popham Centre. Within this centre are 80 networked PCs with printers, scanners and digital cameras available for those needing them. In addition to this central facility, there are seven other ICT rooms around the campus allowing whole class use of computing facilities.

The IT department at Blundell’s School is pushing for the use of revolutionary technology throughout the school to meet the modern day needs of teachers and students alike. “There was the desire to see all class rooms, boarding houses and common rooms having access to the network wirelessly. However, the sheer scale of the site, coupled with the thick stone walls of many of the buildings, was proving problematic,” said Martin Dyer, Director of IT, Blundell’s School.

In addition to the 600 computers, laptops, fixed consoles and staff smartphones connected to the network, there are countless other devices being brought onto school grounds by the students themselves. “The number of devices needing wireless access has grown exponentially and the legacy network simply wasn’t able to handle it,” said Martin. “Coupled with this, it had become a sizeable use of time and resources, as students were constantly bringing their devices to the IT department to get them linked onto the network.”

SOLUTION

Martin and his team decided upon NETGEAR’s WC9500 Wireless Controller. Unlike other WLAN systems that are costly, complex and cumbersome to deploy, the WC9500 high capacity wireless controller is ideal for education establishments. The NETGEAR WC9500 is designed with simplicity in management and ease of use to enable users to set up the systems in minutes.

The NETGEAR WC9500 comes with sophisticated load balancing and rate limiting, to provide fair bandwidth allocation among all clients for robust wireless connectivity. “Effective load balancing is imperative for us. As students move to a particular classroom there is always a large spike in demand for the nearest access point. Therefore, we needed a dynamic system that could seamlessly switch between access points where relevant to share the load,” said Martin.

Blundell’s School also installed 45 ProSAFE® WNDAP360 access points from NETGEAR as part of the deployment. These combine high-performance, dual-band performance with smartly designed management and deployment features.

RESULT

The time savings for Martin and his team following the network upgrade has been instant. “The school supports an environment for bring your own device (BYOD), and runs a separate VLAN for the devices that the students bring in. In fact, we actively encourage students to bring their own laptops to classes once they reach year 10,” said Martin. “Rather than the students having to come to us, we now automatically push a wireless config file out to all the devices at once which has became a huge time saver and been very popular with the students.”

Martin has also seen an increase in teachers using devices – whether it is laptop, tablet or phone – as part of their day-to-day learning toolkit. “Updating our wireless network with NETGEAR has increased both the bandwidth and resilience of our network. We no longer have any dropouts as students and teachers are moving around the campus.”

Blundell’s School is continuing to work with NETGEAR to further improve its 10GbE backbone, further reducing the chance of bottlenecks across the networks as more bandwidth intensive applications are placed onto the network. “We have plans to place all our CCTV security feeds onto the network and add a second dedicated VLAN for our students to use for online gaming on their PlayStations and XBOXs, so we need to pre-empt this,” added Martin. “Our new NETGEAR wireless network allows us to expand with future network requirements without the need for costly rip and replace.”

“We liked that the NETGEAR WC9500 had intuitive management interfaces that allows us to set up a complete wireless network so quickly.”

Martin Dyer, Director of IT, Blundell’s School
BIRKENHEAD SIXTH FORM COLLEGE

BACKGROUND

Birkenhead Sixth Form College is a “Centre of Academic Excellence” for sixth form studies based in the Wirral.

CHALLENGE

Birkenhead Sixth Form College sees technology as a key enabler for both students and staff. As such, “Bring Your Own Device” (BYOD) is part of the college’s policy to actively encourage and support students using their own devices and ultimately offer high quality education for all.

However by actively encouraging BYOD, the college faced multiple devices connecting to the network at any one time. With more than 1,500 devices and counting, many of which would simultaneously log on at peak times (such as the start of lessons), the college’s network was placed under significant pressure.

These growing demands on the network, coupled with the addition of new buildings requiring connectivity, prompted a review of the existing network infrastructure. While the college’s existing infrastructure was seen to offer a good network backbone, it did not provide the required resilience, speed, performance and capacity to support increasing demand, new applications and loads. This could only be achieved by upgrading to 10GbE within the server environment.

SOLUTION

A key part of the process was upgrading the core switches which simply didn’t have the necessary capacity to facilitate the transition to a 10GbE environment. NETGEAR’s ProSAFE M6100 Chassis Series, the high-density chassis alternative to stackable switches, was selected to meet this need and sit at the heart of the solution. This was due to its ability to expand 10GbE capability, from the core to the edge of the college’s network, with no impact on the existing infrastructure.

As part of the upgrade, the college required significant port density in a 4U chassis footprint, as well as full management and power redundancy. With more devices now supported by PoE, the ProSAFE M6100 had the ability to add PoE daughter cards. Should the college choose to upgrade to PoE in future, this capability eradicates the requirement to replace any existing blades or switches – so avoiding any associated additional expense. This means the deployment is not only cost-effective, but also future-proofed.

A need for enhanced storage was also identified as part of the upgrade, to help the college store and manage ever-increasing volumes of data flowing around the network.

RESULT

Most important to Birkenhead was a smart network; an infrastructure that students and staff could have confidence in, knowing it would enable them to carry out their work. By upgrading its entire infrastructure at the core to facilitate a 10GbE environment, the bandwidth capacity has quadrupled. This means the college has not just met, but exceeded its aims despite increasing demands and data requirements.

The new deployment has allowed the college to leverage more 10GbE into the network’s core, plus push further 10GbE out to the edge of the network. This has resulted in improved control and support of the college’s progressive BYOD policy. The ProSAFE M6100 also supports additional key college services such as CCTV and VoIP – as well as a virtualised environment across different campus buildings.

Through its “Technology for Equality” initiative, all students have access to the files and software they need from home or college, via remote access. The network upgrade – specifically the ProSAFE M6100 – was a key driver in facilitating this, ensuring that all students can have access to what they need, when they need it.

Three ReadyDATA units provide additional resilience and help the college cope with the sheer volumes of data. They also provide a disaster recovery and back-up element, should systems fail or primary information become inaccessible.

“Having a resilient and robust core to support a 10GbE environment has enabled us to meet both current and future demands associated with BYOD and other data-hungry services running across our network. Having 10GbE at the core has never before been a prime consideration – now it’s a key component. It’s working so well, I don’t even know it’s there.”

John Paul Szudlowski, IT and Technical Services Manager, Birkenhead Sixth Form College

Birkenhead Sixth Form College meets data demands and BYOD explosion with core network overhaul

CASE STUDIES: EDUCATION
Free onsite networking survey.

NETGEAR offers a FREE, no obligation onsite networking survey, assessing wireless and storage needs in educational establishments, aiming to solve network issues or improve the infrastructure.

With cost-saving at the top of every IT agenda, educational establishments must demand affordable, reliable and scalable solutions from their technology spending.

Make informed decisions when it comes to your network infrastructure and take advantage of a free site survey from NETGEAR.

Save time and money by letting one of our qualified engineers complete a comprehensive survey and compile a recommendation report.

**THE SURVEY**

The survey will be conducted by an experienced pre-sales engineer. It will include:

- Examination of networking infrastructure, including assessment of wireless network and data storage facilities
- Wireless signal testing
- Assessment of network security
- Detailed report, highlighting any issues and documenting recommendations

**SURVEY RESULTS**

Customers will be presented with a report detailing:

- A review of the current network, highlighting possible issues and trouble spots
- Recommendations for network and storage improvements
- Detailed solution proposal, including location and quantity of devices
- Network diagram (if required)

Simply visit [www.netgear.co.uk/networksurvey](http://www.netgear.co.uk/networksurvey), email sitesurveys-uk@netgear.com or call +44 (0)1344 458200 to arrange a free networking survey.
NETGEAR offers a FREE, no obligation network site survey for educational establishments. Request yours now.

Web: www.netgear.co.uk/networksurvey
Email: sitesurveys-uk@netgear.com
Phone: +44(0)1344 458200
LET'S START WITH THE FUNDAMENTALS – THE BASIC BUILDING BLOCKS FOR HIGH PERFORMANCE WIRELESS

NETGEAR ProSAFE® Wireless-AC and Wireless-N Access Points deliver robust security, reliability, and high performance for today’s demanding educational needs. Our access points can be configured in minutes and include comprehensive monitoring and detailed statistics for ease of management.

An increase in wireless management challenges are best served with a centralised management platform. Choose to manage your WLAN either through the Cloud with Business Central Wireless Manager or with a hardware based on-site controller.

Easy to deploy Wireless Management
The ProSAFE Wireless Controller range offers a high-performance and fully-featured wireless LAN architecture to meet the growing demands of the education sector. Our wireless controllers simplify wireless deployments and network management to deliver safe and secure wireless for students, staff and guests.

• Enable wireless users to seamlessly roam while continuously connected to the network
• Optimise your network with automatic RF channel settings and adjustments of access point output power setting
• Centrally monitor and manage access points for single or multiple sites
• Support the use of rich multi-media content over the wireless network
• Protect against intruders via advanced wireless rogue access point detection algorithms
• Segment guest, staff and student access with multiple SSIDs, Guest Captive Portal, and standard based VLAN configurations

Business Central: Your effortless cloud network
Business Central Wireless Manager leverages Software-as-a-Service (SaaS) infrastructure to provide centralised control and comprehensive monitoring of all wireless access points and clients directly from the cloud – anytime, anywhere.

Using a single portal dashboard, bring multiple sites, access points and users under one management umbrella within minutes. Manage wireless SSIDs, control access on your network, and run bandwidth usage reports with a few clicks. Achieve full visibility of your network with real-time alerts to keep you in total control of evolving service needs from day one.

WHAT ELSE SHOULD YOU ALSO CONSIDER AS YOUR SCHOOL GROWS?

NETGEAR ProSAFE Smart Managed Switches provide a resilient and reliable way to support increasing network traffic needs over time. For growing schools needing more refined control, incorporating secure set-up, access and automated management of prioritised voice, video and data traffic. Our 10G Smart Managed Switch reliably handles the growing loads of voice, video and data traffic – at a price every school can afford.

ProSAFE Smart Stackable switches allow stacking of up to 6 switches managed as one, as well as extra peace of mind through resilient links to minimise downtime and maximise performance with faster connection speeds to the centre or backbone of your network.

ProSAFE Fully Managed Switches are perfect for bigger and maturing networks where granular control is key to minimising traffic congestion and performance bottlenecks for convergence-based applications. If uninterrupted service is top of the checklist, ProSAFE Fully Managed Stackable Switches provide sub second failover to keep you connected where it matters most.

ProSAFE Chassis Switches offer a high-density chassis alternative to stackable switches for primary, secondary and higher education providing reliability, vastly increased speed and versatility. Unmatched in its class, spanning PoE to Gigabit and 10G port density, this is a uniquely flexible chassis platform that enables high performance, highly resilient, fully redundant and future-ready switched networks from the Core to the Edge — without hurting or exhausting IT budgets.

WHAT IT NETWORK SOLUTION DOES YOUR SCHOOL NEED?
WHAT IT NETWORK SOLUTION DOES YOUR SCHOOL NEED?

ReadyRECOVER offers real benefits to education establishments:

- ReadyRECOVER creates a full backup every 15 minutes
- Each full backup just stores the changed blocks - therefore it is extremely capacity efficient
- Easy recovery and limited downtime in the event of a disaster
- Minimised bandwidth requirements for offsite backup
- 5 year hardware warranty and next business day replacement

NETGEAR IS THE ONLY NETWORKING VENDOR TO OFFER LIFETIME 24/7 TECHNICAL SUPPORT FOR BUSINESS PRODUCTS

We understand the importance of a stable and robust network infrastructure. ProSAFE®, ReadyNAS® and ReadyDATA® products are designed to exceed the high standards required of your network. In addition, each product is covered by an industry-leading warranty to demonstrate our commitment to quality. ProSAFE wireless and switching products are covered for the full life of the hardware, including next-business-day replacement. ReadyNAS and ReadyDATA are covered for an industry leading 5 years, which also includes 5 years of next-business-day replacement.

In addition, all NETGEAR business-class products include 90 days of technical support via phone and lifetime support through online chat.