Business Class Wireless to Facilitate Learning

Fast Facts

- 14 individual buildings
- 86 Access points (EAP225 and EAP225-Outdoor) installed
- Network availability scheduled using the TP-Link Omada Cloud Controller
- 3 SSID
- Supports schools BOYD policies
- Centralised network management including reboots and password rollouts

Lytchett Minster School

Industry: Education

Location: Lytchett Minster, Poole

Profile: Business Class Wireless to Facilitate Learning

"Schools are under the same pressures as businesses to provide operational infrastructure 24/7; however, the budgets are very different. We have been able to provide our staff, students and visitors with a business-class wireless network, without compromising on management features, for a total of £4,500, and without the financial burden of ongoing license fees."

- Stephen Coombes, Head of Technical Services, Lychett Minster School

About Lynchett Minister School

Set in the idyllic Dorset countryside, Lytchett Minster School provides secondary and Sixth Form education to over 1,400 students and employs around 200 members of staff. The inspirational campus is spread over 26 acres, accommodated in 14 buildings ranging from an 18th Century manor house to the impressive creative arts block, which includes the school's professional, state-of-the-art 400-seat theatre.

Lytchett Minster School demands good quality, high-speed connectivity, not only to provide excellent teaching and learning resources, but also for the school's day-to-day administration. Teachers take full advantage of the rich supply of online resources to plan, prepare and deliver lessons using interactive content, contributing to the school's dynamic, engaging teaching environment. Support and administrative staff require quick and efficient access to school communications systems. Students need access to their work and emails across the site. With such an emphasis on efficiency and lesson delivery, as dependency on network access grew, it became clear that the existing wireless network was no longer fit for purpose.

A series of aging, independent access points mounted in the school's corridors, with no centralised management, meant that the network team was forced to be reactive when issues arose. If a problem was reported, a member of the team would have to physically visit the area to identify the fault and potentially manually reset or reconfigure the access point concerned. With around 80 individual access points spread across the campus, this was clearly inefficient and time-consuming. As the system was not voucher based, there was the potential for the pre-shared key to be compromised. To maintain security as best as possible, the network team had to reset the password on each access point individually. Once this task was complete, without RADIUS authentication, the school's staff would then also have to reconnect each of their devices to the network.

Requirements

Maintaining a balance between the budget restraints currently experienced by schools and the functionality required to provide a first class learning environment, the network team researched the market. Key features on the checklist included PoE, RADIUS authentication, centralised management, provision of multiple SSIDs, as well as voucher authentication. "There are plenty of solutions available providing the features we needed; however, we received quotes ranging between £250 and £300 per access point – with an annual license fee to factor in, too," said Stephen Coombes, the school's Head of Technical Services. "Annual licensing was a deal breaker. For schools in particular, it seems inconceivable that an additional fee should be levied every year simply to use the hardware we have already purchased. We needed a realistic one-off payment that covered all the functionality including the management software."

Evaluation

To test and ensure the solution would meet their needs, the Lytchett network team requested two EAP225 access points for evaluation purposes. With a clear vision of the network configuration required, they set about a series of rigorous tests to ensure the EAP225 and controller software would provide all the functionality and security required by the school.

During the testing phase, Stephen and Darren demonstrated that the EAP225 range had the features and functionality to provide the school with unified, secure wireless coverage for staff, students and visitors. Purchasing via Stone Computers, Lytchett Minster placed an order for a total of 86 access points (EAP225 and EAP225 Outdoor) with the understanding that the network team would install the units in-house.

Installation

Working around lessons, it took Darren and Stephen, along with their team of technicians, just three weeks to fully install 74 access points. The fact that they are PoE-enabled and can be managed centrally means that the access points can be located in individual classrooms rather than corridors for optimum performance and coverage. Until all the old access points were replaced, the team performed one-for-one swap-outs with a configuration similar to the old devices, so that the service would look the same to the users. Once all the new EAPs were in place, the new SSIDs could be activated. "Being able to phase in the new EAPs in this way was extremely useful: there was no service disruption for the school, and the changeover to the new network configuration was faultless," said Darren.

The TP-Link EAP225s form the basis of the Lytchett Minster wireless network policies and BYOD strategy. There are 3 SSIDs in place that use a RADIUS server to authenticate and authorise individuals. Using access control lists, the network team can issue users with vouchers that restrict Wi-Fi access at the subnet; this enables them to differentiate the service to the core user groups: for example, the staff SSID is less restricted than the general guest network.

The primary network is for the school's own devices. As there is limited mobile data coverage in its rural location, the school provides a guest network for peripatetic teachers, contractors and other visitors to the school. Using the TP-Link controller software, the guest network is scheduled to be available during school hours. An additional guest network is activated between the hours of 4.00pm and 10.00pm for members of the public using the sports facilities which are available to clubs and societies outside of school hours.

Special provisions are made for Sixth Form students in line with the school's BYOD policy. Recognising that, in the Sixth Form, students take more responsibility for their learning, the school enables pupils to bring and connect their own devices. Thanks to the flexibility of the solution, this network provides differing levels of access to Sixth Form students in various areas of the site.

Celebrations

As an additional source of revenue, the school offers its stunning location as a wedding venue. The network team employs the captive portal functionality of the EAPs to provide free Wi-Fi at such events whilst ensuring guests accept the terms and conditions. "The remote management functionality enables us to be flexible and provide guest with the core services they expect without adding significantly to our workload," said Darren.

Transparency

Deploying the EAP network and software controller has been transformational. Data from each access point is collected centrally and displayed on large screens in the school's data centre, enabling the team to be proactive in their network management, managing individual access points before a member of staff has the need to log a support ticket. The support team can see not only the status of each individual access point, but also granular details such as the number and names of connected devices.

Timesaving

Centralised management has also saved the network team many hours of maintenance by enabling them to perform tasks from the network management office and by automating simple but time-consuming tasks; for example:
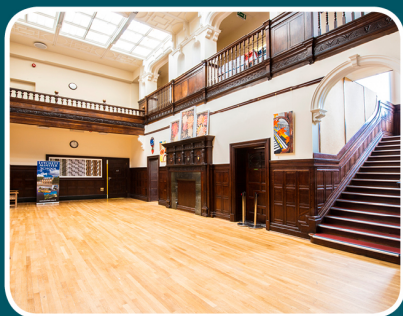
❯ Rebooting the network no longer requires manually connecting to over 80 devices – all can be rebooted from one central interface.

❯ Rolling out a new password would previously take a considerable amount of time as each access point needed manually reconfiguring. A straightforward task such as this can now be completed in minutes, contributing to the overall network availabilty, security and stability, and allowing the team to focus on other matters.

❯ Scheduling network availability for various interest groups so that, for example, there is a network available for members of the public using the sports facilities outside school hours.

❯ Controlling the number of devices logging in per voucher.

Results

The results speak for themselves: network availability has improved immeasurably since installing the EAP units. The access points have been installed directly into classrooms (where the strongest signal is required) thanks to the flexibility of PoE and the ability to run diagnostics and manage individual devices remotely means maintenance can be performed without disturbing teaching. To ensure the best possible service throughout the day, the EAP units are set to automatically reboot every morning at 6.00am.

The network has started expanding to cover outdoor spaces too. A recently-constructed outdoor classroom space and general seating area already has Wi-Fi coverage; the network team has plans to provide further areas, such as the school's walled garden and sports pitches, with network access in the coming months. Due to the unified nature of the EAP units, these outdoor areas will also be controlled and managed via the same controller software, providing an integrated network across the school campus.

"Schools are under the same pressures as businesses to provide operational infrastructure 24/7; however, the budgets are very different. We have been able to provide our staff, students and visitors with a business-class wireless network, without compromising on management features, for a total of £4,500, and without the financial burden of ongoing license fees. This compares with quotes of around £28,000 for the hardware plus the annual license fees from other brands. We're delighted with the implementation: the hardware was easy for the team to install and we are constantly coming up with new ways of refining the network using the software controller to save us time and improve the overall service to our users," said Stephen.