



Making Progress Happen: WLAN at Washwood Heath Technology College

Technology is often the lifeblood of daily business operations. If the network infrastructure doesn't work, the organization doesn't either, with reputation and profit the casualties. What happens, though, when the network becomes not just an operational enhancement, but rather a matter of survival – for the organization and the people it serves?

For Washwood Heath Technology College in Birmingham, UK, this is precisely the situation. With many of its students coming from economically disadvantaged backgrounds, access to technology is a critical factor in providing the opportunities that could literally determine the direction their lives will take.



Given such high stakes, Washwood Heath's IT team looked to wireless LAN (WLAN) as a means to quickly, cost-effectively provide network access to both students and faculty. And amidst the many solutions on the market, the Extricom solution was ultimately chosen based on its mix of technological and Total Cost of Ownership (TCO) advantages.

The Technological Bridge

Washwood Heath, a predominately immigrant, working class ward in Britain's second largest city Birmingham, would seem like an unlikely venue for a WLAN deployment. Characterized by high unemployment, cultural isolation, and a myriad of other social issues that plague poor inner cities, its residents have few opportunities to exploit the benefits of information technology. For the 40% of the ward's inhabitants who are under the age of 19, however, it is precisely this access to modern networking technologies that offers a bridge to a better future. Washwood Heath Technology College, a large neighborhood comprehensive school specializing in technical education, is responsible for enabling its 1,450 students to make a successful transition into Britain's thriving, IT-driven economy.

The WLAN Revolution

For schools like Washwood Heath, WLAN is a potentially revolutionary technology, allowing them to leverage a wide range of learning and administrative tools in the classroom with a minimal investment in new infrastructure. Combined with mobile resources such as laptops, WLAN allows schools to bring IT to the students rather than vice-versa. Such a system constitutes a powerful learning tool, enabling access to online lessons, presentations, and internet research, exactly the kind of stimulus that can turn an average student into an accomplished one.

WLAN has an important administrative function too, enabling teachers to tap into school centralized management information systems (CMIS) in real-time. Among its many applications are: aggregating statistics to flag truancy patterns; easily checking on student academic performance; or quickly reviewing student health records in case of medical emergency. Being able to access this information anywhere on campus rather than just in administrative offices can go a long way toward increasing staff efficiency and maximizing human resources.

Of course, the significant benefits of WLAN cannot come at disproportionate cost. In the world of primary/secondary education, IT resources are often limited. For this reason, the complexity of deploying and maintaining a WLAN must be greatly reduced compared to traditional implementations.

Addressing Basic Problems

Washwood Heath Technology College had basic issues to deal with. Many students entering the school were academically poorly prepared and had limited English skills, resulting in very low achievement scores on standardized GCSE testing. In 2002, the school had been placed in special measures, subjecting it to close scrutiny by local educational authorities, and it had struggled since then to improve its academic standing.

One nagging problem was student absenteeism, which not only disrupts learning but also has

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David Carr
Network Administrator
Washwood Heath Technology College



Project Scope

Deploy pervasive WLAN to enable CMIS Attendance Module campus-wide for 1,450-student inner city comprehensive school in Birmingham, UK.

Solution

- Extricom EXSW-800 Switches and EXRP-20 UltraThin™ Access Points.
- Ensure effective functioning of CMIS Attendance Module, with scalability to other CMIS modules and online learning applications.

Results

- WLAN easily deployed with minimal administration overhead.
- Voice-ready (VoWLAN) infrastructure.
- Flexible system has wide applicability for improving student academic performance.

implications for student safety. Washwood Heath's CMIS system included an attendance module that could instantly aggregate absences and enable school staff to contact the parents of missing students. Unfortunately, the CMIS was not accessible in classrooms where attendance was being taken, limiting the staff's ability to react quickly when students failed to appear.

Solving One Problem Could Help Solve Others

Washwood Heath school management decided to make the attendance system accessible in real-time and tasked their IT team to do so by implementing a WLAN in the summer of 2006. As the project got under way, the IT staff soon realized they had a broader opportunity: to deploy a flexible IT infrastructure that would greatly assist their educational mission.

Working with First Class Technologies, a local VAR, Washwood Heath's IT staff explored the many WLAN solutions in the marketplace and decided that the Extricom solution was best suited to their needs. As David Carr, the school's Network Administrator explained, "We were determined to make a significant technology investment, but to justify this we needed a WLAN that could stand the test of time. We concluded that the Extricom solution would fit the bill, since it's a technology with a history of success in the educational environment, while also being at the cutting edge of WLAN."

Making WLAN Accessible Everywhere

Washwood Heath's goal was simple: provide wireless service everywhere, to everyone. The challenge, however, was that the school's campus consists of several multi-story buildings and a sports hall, and, as is typical of many schools in the UK, is built of reinforced concrete in a traditional "closed" hall and classroom layout. In this environment, it is not easy for radio signals to propagate, a necessary prerequisite for pervasive WiFi networks. Compounding this problem is the need to ensure consistent data rates to users who may be densely clustered in classrooms.

The simplistic answer would be to add more access points (APs), but for traditional WLAN solutions based on a cell-planned topology, adding APs is anything but simple. This is due to co-channel interference and channelization issues which can cripple the wireless network, causing spotty coverage or very low bandwidth for users.

A Solution for the Real World

The Extricom WLAN renders these technical issues non-factors. Extricom's topology is based around the "Channel Blanket," a unique

architecture which uses each available radio channel, on every AP, to create blankets of coverage controlled by a central switch. Freed from co-channel interference and channelization constraints, the system can ensure "wire-like" client connections, and a guaranteed and predictable level of service for all users. It also allows for simple deployments and subsequent administration, an important TCO determinant.

As Faisal Malik, the Deployment Project Manager, attested, "The beauty of the Extricom solution is basically that one AP doesn't interfere with another, so putting in and running the system is a straightforward, easy process." Taking advantage of this, the implementation team quickly deployed the Extricom solution over Washwood Heath's entire campus to provide coverage for some 19,250 square meters (173,250 square feet) of classrooms, assembly halls, and administrative areas. The school's CMIS electronic attendance system was enabled over the WLAN without problem and has been functioning smoothly since, furnishing cost-savings in terms of staff time and enabling quick reaction to student absenteeism.

A Single Application Creates Many Benefits

The need to ensure access to a single application has given Washwood Heath major collateral benefits, as the operationally flexible Extricom solution provides a comprehensive infrastructure for the school to implement a variety of applications and programs. The school's IT group is currently planning to enable additional CMIS modules over WLAN, as well as exploring the use of VoIP phones.

The real winners from the system's pioneering WLAN deployment, however, will be Washwood Heath's students. The school's IT team is planning to implement mobile computing, which will give students access to online learning resources directly from classrooms. This new capability is expected to have a significant positive impact on the Technology College's improvement in academic performance.

And in the view of David Lindley, Washwood Heath's Business Manager, that is the real benefit of the Extricom WLAN. "Tapping into virtual learning applications of the whole Birmingham, and national, educational system should improve our GCSE scores and provide a huge value-add for our kids. Implementing a wireless network is a bit like the creation of the World Wide Web. It probably didn't seem like much when it was being built, but it opened up the possibility for tremendous achievement."