Edinburgh's Telford College

EXECUTIVE SUMMARY

At Edinburgh's Telford College, ICT staff members needed to deploy technology that would allow students to access network resources using their own computers. That decision required three functions: (1) implementing controls to reconcile unrestricted access by all students with securing the network from rogue devices, (2) containing the spread of viruses, and (3) preventing users from plugging un-authenticated laptops and other devices into the network.

To solve these problems, Edinburgh's Telford College deployed Bradford Networks' Campus Manager Network Access Control (NAC) solution. Bradford Networks was the only vendor that met the technical requirements outlined by the university tender. These included agentless end-device monitoring, a vendor-agnostic approach to infrastructure compatibility, and enabling the college to control its own resources by locating them on-site. This approach offered three major benefits: First, it provided equally secure access to network resources for both LAN-centric and wireless students as well as endpoint devices such as PDAs and Blackberrys. Secondly, by automatically enrolling devices into their correct VLANs, it reduced or eliminated manual moves, adds and changes. Finally, it supported the university's goal of enabling students--located anywhere on campus–to access network resources with their own machines securely, rapidly and responsibly.

THE CHALLENGE

In August 2006, students returning to the new waterfront campus of Edinburgh's Telford College discovered that, for the first time, they could access network resources with their own computers.

"Prior to 2006, individual classrooms, laboratories and conference halls were equipped with PCs, complete with all the applications necessary for student coursework," explained Bahram Tavakoli, Head of the college's Information Communications (ICT) Technology team. "This required the school to maintain separate network domains for staff and students."

As the campus relocation process continued, Tavakoli and his ICT team conferred with the college on how they could implement cutting-edge authentication technology that matched the school's modern setting.

"In relocating to a new campus, it made sense for us to evaluate the latest technology that would allow students to connect to the college network with their own equipment, rather than being tied down to our machines. As part of this initiative, we implemented secure remote connectivity, which enabled students to access their accounts from any computer or location on campus," said Tavakoli.

To control students' open access to network resources, particularly with unregistered rogue devices, Tavakoli at first elected to lock students into specific VLANs.

The virus containment process proved slightly less problematic. "A virus tagged to a specific MAC address prompts ICT to move that user to a dead-end VLAN. If they attempt to access the network again, they receive an error notice which generates a call to our support staff," said Tavakoli.

Even with these user rules in place, however, policing the accessibility and remote security for 20,000 full, part-time and on-demand-learning students remained very much a manual and time-consuming process.

BRADFORD NETWORKS SOLUTIONS
Campus Manager

INDUSTRY
Higher Education

LOCATION
Edinburgh, Scotland

CUSTOMER PROFILE
Named after Thomas Telford, the great Scottish Civil Engineer, Edinburgh's Telford College first opened in 1968. The original college cost £1.5 million to build and taught 7300 students per year. The college is a corporate institution governed by a Board of Management whose members represent key industrial and commercial sectors, professional organizations and local government. Telford College caters to over 20,000 students and nearly 900 staff, bringing the latest developments in teaching and educational technology to Edinburgh.

In 2006 the College replaced its three campuses with a single, custom-built complex in the heart of the North Edinburgh community.

"One of the other things we like about the Bradford solution is that we maintain complete control over the system. A number of similar NAC-based solutions are sold in the UK as managed systems and that level of control wasn't something we were ready to give up. Having the equipment on site and being able to see what's actually happening with it, in real-time is a huge help in issue mitigation and resolution."

Bahram Tavakoli,
Head of Information Communications Technology
Edinburgh 's Telford College

✓ BRADFORD
networks

www.bradfordnetworks.com

THE REQUIREMENTS

 Tavakoli set three benchmarks for prospective NAC vendors: First, the vendor had to manage network authentication autonomously as well as transparently. Secondly, the vendor's solution had to be compatible with the college's current infrastructure, which mixed IBM and HP servers and Nortel Networks switches. Finally, the vendor's solution could not rely on an authentication agent placed on the end station.

"Some solutions we considered required us to do just that – installing an agent on the end user's device. It was an outcome we wanted to avoid at all costs."

In the end, the college found that Bradford Networks was the only company whose products could meet all their requirements with its agentless solution and its agnostic approach to existing infrastructure. In addition, Bradford's deployment experience in UK universities and independent schools gave Tavakoli and his team confidence that Bradford's Campus Manager for network access control would work well in their environment.

"Selecting a vendor was really about what fit our needs. Above and beyond the technology 'fit,' however, Khipu Networks [Bradford's exclusive vendor for Bradford Campus Manager in the UK] allowed us to examine public Campus Manager user group forums so we could see for ourselves the real, day-to-day issues associated with using the solution, said Tavakoli.

In Tavakoli's opinion the vendor-agnostic approach favored by Bradford Campus Manager also supported the college's long-range infrastructure needs.

"Because Bradford Campus Manager works on an SNMP level that is not tied into a specific vendor, it serves our current needs and will continue to work if we move to a 'best-of-breed' infrastructure over the next three to five years," said Tavakoli.

Bradford's agentless solution, said Tavakoli, proved particularly compelling, especially when it came to the so-called "day release" community: transient users who are typically sponsored by an external agency, company or organization.

"The day-release students use laptops that are supplied by their company's own IT departments. Those laptops are effectively locked down and we do not have the ability or the inclination to install a software agent on their machines," said Tavakoli. "Bradford's ability to employ a 'one-off' scan with its own agent and without compromising an individual's, or a company's, installed security software was ideal."

He added, "One of the other things we like about the Bradford solution is that we maintain complete control over the system. A number of NAC-based solutions are sold as managed systems and we were not ready to give up that level of control. "Having the equipment on site and being able to see what's actually happening with it in real-time is a huge help in mitigating and resolving issues."

Tavakoli also found another advantage for Bradford in the UK: its relationship with Khipu.

"As a public sector organisation, we have a rigorous procurement framework. Khipu understood those guidelines and simplified the process for us so we did not have to spend cycles evaluating a never-ending queue of vendors vying to be our NAC solution," said Tavakoli. "Khipu made this entire process efficient and they were exemplary in their level of service for all of our needs."

THE SOLUTION

From the outset, Tavakoli was focused on granting network access to LAN-locked students. He realised early on, however, that IT administrators had similar needs. He wanted to enable wireless access to those same resources with the same guarantee of reciprocal security for both students and IT administrators

Currently each user, whether on the LAN or the WiFi network, must have an Active Directory account. Each student or guest user (e.g. staff member, visiting lecturer) is included in a group of MAC addresses that is automatically compared against the system. To authenticate, the Active Directory account performs a RADIUS handoff to Campus Manager, which performs a RADIUS handoff to the Microsoft IS server access point on the network. As a result, no generic "guests" exist on the network.

"We can create guest-only accounts although, with the sheer number of students, we consider it not as secure as registering accounts because students could register guests as easily and as presumptively as staff. In our opinion, security by obscurity is not a preferred wireless access strategy," said Tavakoli.

He added, "Guests or staff must have an account on the Active Directory to access network resources. If someone is lecturing for a day, a week, or longer he is supplied with an account on our Active Directory."

Bradford Campus Manager's active scanning features also enable administrators to keep wireless-enabled endpoint devices in check.

"We register mobile devices, (e.g. PDAs, Blackberrys), on a one-to-one basis while also determining whether we trust the people using them. If so, the device's MAC address gets added to our device listing," confirmed Tavakoli, noting that the majority of devices used by staff are issued by the ICT, which simplifies authentication.

That same endpoint authentication process is not yet available to students, however.

"Even with 79 access points, we cannot allow 8,000 students to register their mobile devices on our WiFi network. That might be possible with the next generation of VoIP-enabled WiFi paradigms," suggested Tavakoli.

THE FUTURE

Tavakoli is already planning for the future of his network – as well as that of Bradford Campus Manager.

"The next stage for us would be to roll out the system agent to our internal network of devices, the 'clean' network inside our firewall. That includes our wired staff, our internal VLANs and our internal trusted network. This will enable us to monitor and maintain a better level of control than we currently have in Active Directory," said Tavakoli.

In defining the Return-on-Investment (ROI) for this system, Tavakoli sees his savings as both practical and philosophical.

"With Campus Manager, you can move equipment around more easily. For example, I can plug in an IP phone and it will automatically be enrolled in the correct VLAN. This is done without having to engage a member of our IT staff to locate the correct port. Not spending hours of your day hunting down the MAC addresses of devices certainly cuts down on the amount of human capital needed to address, mitigate and resolve network related issues," said Tavakoli.

At the same time, however, he recognises that implementing Bradford Campus Manager can raise new issues.

"It [Campus Manager] forces you to audit your network. The fact that something I was completely unaware of appears on my network interface, can be frustrating." conceded Tavakoli.

He added, "It also helps me understand what's happening on the network and, while that often means more work, the visibility cuts both ways. The time and money we have invested in Bradford Campus Manager has both eye-opening and a very welcome service for everyone concerned."

ABOUT KHIPU NETWORKS

Khipu Networks are a UK based advanced systems integrator, focusing on supplying innovative secure compliant infrastructure solutions across the public and private sector. Hampshire-based Khipu Networks Ltd are the security division of the White Clarke Group of companies. Khipu Networks are the exclusive supplier of the Bradford Networks Campus Manager solution into the Education arena.

NAC Centre of Excellence for Education (NCEE)

NAC Centre of Excellence for Education (NCEE)
A designation given selectively to those Bradford Networks Partners who have completed certification training, focus on the network security needs of Educational institutions and have demonstrated exceptional proficiency in the area of network access control. To apply for this level of designation, partners must have sold Bradford Network's Campus Manager product for a minimum of two years and successfully installed the Bradford solution at a minimum of twenty (20) distinct institutions.

As a result of Khipu Networks' successful work within the Education space, they were awarded Specialist Reseller of the Year in 2007 by Computer Reseller News (CRN).

The reason Khipu is Bradford Networks' exclusive business partner in the UK and Ireland for the education sector is the pride we take in representing them. From the first phase of engagement through to actual deployment we are part of our customer's extended technical team. They're never left on their own once they've engaged us. That standard of excellence has sustained us through 80 institutions in country deployments with more than 500,000 users managed by Campus Manager on a daily basis. In Edinburgh's Telford College, for example, we met early on with the college's technical team to understand their specific requirements for network access. We rapidly came up to speed on the NAC-related challenges that informed both the technical as well as business aspects of their institutional model. We worked closely and had a very good working relationship with the members of their ICT to ensure we covered every element of their requirements. As a result of working with their team and our experience of deploying the NAC solution into different institutions, we met or exceeded their expectations on every level."

Matt Ashman
Commercial Consultant
Khipu Networks

Khipu Networks Limited

Infineon House
Minley Road
Fleet
Hampshire, GU51 2RD

Tel (Switchboard): +44 (0)845 2720900
Tel (Support): +44 (0)845 2720910
Fax: +44 (0)1252 629008

ABOUT BRADFORD NETWORKS

Bradford Networks develops advanced network access control solutions for wireless, wired and VPN networks. Bradford's award-winning, out-of-band appliances leverage existing network infrastructure to automatically enforce NAC policy at the network edge making networks more secure and efficient. Privately held, Bradford Networks is located in Concord, NH.