NETWORK ACCESS CONTROL MEETS NEW COLLEGE'S DETAILED TECHNICAL REQUIREMENTS

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– *James Dore, IT officer of New College at Oxford University*

NEW COLLEGE
UNIVERSITY OF OXFORD

New College was looking for ways to increase security on their network in the face of expanding access by students, while still maintaining a seamless and easy user experience. The IT office at New College realized that although their homegrown authentication and registration solution had succeeded for many years, new security measures were needed because of student-driven demand for campus-wide wireless and wired connectivity. Among other capabilities, New College needed a solution that would enable them to:

- Dynamically manage switched ports that let students use the same password for wired as well as wireless access
- Configure VLANs more productively and assign membership based on level of membership access
- Reduce the incidence of virus-related outbreaks

New College wanted to expand wireless capabilities and access to deliver infrastructure continuity to the entire campus. In addition, they wanted a solution that delivered real-time tracking of student usage so they could maintain the operational integrity of the college's network infrastructure.

New College is one of the largest colleges within the University of Oxford. An autonomous, self-governing institution, it handles the overall infrastructure profile and needs. While all 38 individual colleges use the University's switched Gigabit backbone, that is where the system integration ends.

While the University provides some centralized services, such as e-mail for students, backup, remote access, VPN systems and more, the individual colleges add their own value to the data, along with internal systems and solutions. There was no single IT solution that unified all the colleges. As wireless demand grew, New College needed a network solution that automated authentication and eliminated the need for students and staff to re-register devices every time they added a network or new wireless card. As a result, the IT group was charged with delivering a new authentication solution for both students and IT administrative staff that was exceptionally reliable, secure, and virtually transparent.

DETAILS

CUSTOMER: New College (Oxford University)

INDUSTRY: Education

LOCATION: London, England

BUSINESS IMPACT

- Streamlined student network access through simplified on-boarding and authentication of new students by enabling access settings via profiles
- Enhanced network control and security by offering complete visibility into all network access
- Enabled secure, identified guest access for conference attendees
- Increased network security by requiring users to install security patches and updates before accessing the network

DEPLOYMENT

- Network Access Control

IN SEARCH OF A FLEXIBLE SOLUTION FOR NETWORK SECURITY

New College's network infrastructure is exclusively based on fifty 3Com Series 5500, 4400 and 4210 switches with the server infrastructure mainly consisting of Novell Netware and SUSE Linux. This is tied into the college's Novell-based e-directory on the back end, with a Gigabit feed to the Oxford University backbone in each direction. There is a smattering of Windows servers, including some which are running VMWare/ VSX as virtual machines. There is also a mix of 150 Windows XP desktops for the administrative staff, also managed by the Novell system. In total there are approximately 1,200 nodes, including 700 under- and post-graduates with the rest serving as staff and administration end stations.

"The college's academic staff can buy what suits their individual needs so we have a broad mix of PCs, as well as MACs, with a few Linux machines," explained James Dore, IT officer of New College at Oxford University. "Students typically bring their own machines – mostly Windows-based but up to 40% use Macintosh."

When evaluating prospective authentication vendors, Dore cast a wide net, looking at a wide variety of solutions. "We looked at various 802.1x based solutions from all vendors and determined that each was too inflexible for our needs. They either required hot software on the client workstations – which we can't do because most of our machines are privately-owned – or they required us to do static configuration on a port, which is exceptionally labor intensive. In fact, everything we looked at was designed exclusively for situations where you know which machines are connected to which socket at any time. We needed a solution that was built from the ground up, that was flexible enough to work in our environment," said Dore.

A visit to the Oxford and Cambridge CITC conference gave Dore an epiphany along with hope that his search for a qualified authentication and registration solution would succeed. They learned of Fortinet's network access control solution and knew it was what they had been looking for.

"Network access control (NAC) did exactly what we wanted it to do: dynamic management of switched ports based on user credentials stored in our e-directory system," said Dore. "As a result, we could use the students' existing Novell user names and passwords, which they already used for logging into Windows workstations and for wireless access. Through NAC, we could glean extensive information from each machine and liked it even more."

The NAC solution's nearly imperceptible network footprint also proved persuasive. "Unlike some of the solutions we looked at that sat on the firewall and brought network traffic to a crawl, NAC is an out-of-band solution that does not sit between the college and the Internet backbone," said Dore. "We could maintain our fast connection and give up nothing on the back end."

SIMPLIFIED USER MANAGEMENT, SECURE PROVISIONING, AND SHUTTING DOWN ROGUES

The Fortinet NAC solution stood out as the only solution that could meet the college's list of detailed technical requirements. Because it was fully incorporated into the New College's wired and wireless domains, it paid dividends almost immediately.

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Fortinet's NAC solution simplified management of wireless users. "In fact, NAC helped us track down a rogue wireless access point that was handing out DHCP leases on the wire. This student-generated lease was interfering with the network functions on that segment because it was sending out incorrect IP details and showing up as an unregistered hub in NAC," said Dore.

Using NAC, Dore and his IT staff quickly identified the actual user and shut his port down — without having to knock on the student's door. According to Dore, NAC's ability to seamlessly manage both wired and wireless domains also has implications for securing expanded connectivity and infrastructure upgrades on campus.

Dore is planning to replace all the network hardware that is at least 10 years old in one or more of the outlying buildings. Using NAC's broad management capabilities, he can upgrade access points and network infrastructure with a single stroke. In addition to its impact on wireless users, NAC has also integrated well into Dore's Novell-based e-directory, providing excellent performance.

That integration also has guest management benefits for the college's burgeoning conference trade. "Using e-directory, we generate conferee user names nearly on the fly, giving conferees a user name unique to them and to the conference they're attending," said Dore. "Those users are also separated into a dedicated VLAN so their traffic does not impact other networks or users unrelated to the conference."

After the initial deployment, New College expanded the solution to increase efficiency and further streamline provisioning. "We now take as many users as possible, place them in different VLANs, and apply different firewall rules to each group based on their needs

and their VLAN membership," said Dore. "For example, students can have one level of access, academics and staff another, while administrative support staff gets unlimited access."

For Dore, an additional benefit of implementing NAC is enhanced control over virus exposure. "Because our users are generally very mobile, they regularly take their unsecured machines out of the college network, which is fully protected by a firewall, and into a completely unprotected network. Their machines could be infected by a virus, which they bring back onto campus," said Dore. "Through NAC we now force them to keep their machines fully updated, which effectively eliminates viral outbreaks."

"NAC's built-in scanning system, which includes a check for viruses as well as Windows patches, made it very easy for us to require updates and secure computers we don't own. It's a great help because it forces the user to update or risk losing network access. They can no longer hit 'ignore' and carry on as before," said Dore.

With NAC in place, New College can track and shut down rogue access points quickly, as well as expand wireless connectivity and access points throughout the campus. In addition, it provides detailed visibility into student activity, and has enabled the college to save time when updating machines, exercise more consistent control, and maintain operational integrity over the college's network infrastructure.

CONCLUSION

New College was the first of the University's federated campuses to deploy NAC to regulate student registration and network 'scan-based' authentication. With the transparency of its footprint, its ability to track down rogue access points, and its ability to tighten network security, NAC's robust authentication features have significantly enhanced network security and control for New College.

"NAC has saved us a lot of time updating students' computers and providing virus updates. It was a major drain on our IT staff," said Dore. "NAC has provided me with detailed insight into who's using what machine on our network. That's information we just didn't have previously and, practically speaking, it's not visibility we would ever turn down. We're very pleased with the decision we've made."

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