



Executive Summary

Industry

- Education

Environment

- 1500 K-12 Students
- 350 Staff
- 2500 Connected Devices
- 22-hectare campus with more than 20 educational, administrative, and sporting facilities

Technology Needs

- High-performance, reliable, responsive network
- Automated BYOD access and security policy compliance
- Reporting and analytics on network performance

Extreme Solution Components

- ExtremeSwitching™
 - Ethernet and Edge Switches
- ExtremeMobility™
 - Wireless Access Points
- Extreme Management Center
- Extreme Application Analytics

Results

- Network performance, reliability, and scalability meeting school and user needs
- Centralised management, visibility and control of all network aspects
- Data analytics providing insight for reactive response and proactive planning



Gold Coast School at the Forefront of Education and Technology Innovation

Somerset College, located on Queensland, Australia's Gold Coast, is a co-educational, independent, inter-denominational school catering for students from Pre-Prep to Year 12.

With a large and diverse student population of approximately 1500, together with the introduction of a BYOD program, Somerset College needed to provide a network with exceptional performance, security and privacy measures that could support the different access needs of students, staff and guest users. Flexibility was also a factor for an ever-evolving network; as well as robust wireless access to network resources across a geographically-distributed local area network (LAN). The College campus supports a hyper converged data centre across two sites, and has deployed a range of IoT and IP-connected devices, including CCTV, IP telephony, door access control, bell system and a PA and emergency notification system with horn speakers.

The additional demands being placed on the environment from users and connected technologies required a greater level of control, visibility and responsiveness for the College's IT team than the existing wired and wireless network could provide.



An Environment Needing 24x7 Availability and Access

Lisa Thomson, Dean of Information Technologies at Somerset College, explains that schools have completely different requirements today in terms of networking. Users – including students, parents and teachers – now expect to be able to access school information and resources at any time, not just on school days.

“We’ve got a huge LAN, it’s very spread out and can be difficult to control. Schools no longer operate 9-3; our network needs to be accessible 24x7. We have a single sign-on via Microsoft Active Directory for students, staff and parents. Our students could be trying to log on to our learning management system at 8pm on a Thursday evening to finish an assignment, our teachers may need to access our Student Information System to input assessment results late at night and parents could be paying school fees via our online payment system, on the weekend, maybe from a different time zone overseas,” said Thomson.

“There’s very little opportunity for us to have downtime on our network for maintenance or upgrades. Increasingly, that’s the challenge for schools. Now, we have to advertise to students, parents and teachers when we are planning to do scheduled maintenance.”

Lisa Thomson, Dean of Information Technologies at Somerset College

Several years ago, the College implemented a BYOD program for staff and students. To begin with, the school was forced to manually manage its users and their devices, which became time-consuming and difficult to apply consistent security policies and access levels. The school also provides network connectivity for point-of-sale smart cards and cashless cards to a number retail outlets and cafes across the campus, as well as a separate physiotherapy practice on-site that operates in the fitness centre building, with its own IT systems, phones and requirement for patient data confidentiality.

“We had a challenge: how do we safely manage all of our different users on the one network? We needed a way to manage all the devices connecting to the network, automate policy and compliance based on who you are, and what your level of access should be,” said Thomson.

Security, Control, and Visibility

While the College’s existing wired and wireless network was providing some of the connectivity performance that the school needed, it didn’t give the IT team any visibility on what was happening across the network. With an increasing array of devices and technologies needing to connect to the network, it was creating an operational and administrative headache. For the College to embrace new technologies like IoT, they needed to be able to deploy them in a secure way.



“Now, everything is Internet-enabled – and everything has to work. Several years ago, an end-user plugged an IP phone into the wrong port and it caused issues for the whole network. It took us quite some time to chase down the issue and resolve the outage. Now, with the smarts in Extreme switches, this would not occur,” said David May, System Administrator, Somerset College.

When Thomson and May first saw a demonstration of Extreme Networks, they were extremely impressed with the software piece: its analytics capabilities, diagnostics, and the ability to see the different network layers and how the network was performing. These software-defined network features were exactly what the College needed, but how would the network perform at the basic level?

Extreme Networks was put to the test in a 'bake-off' with the College's incumbent network provider. A classroom was set up with wireless, and both systems were put through the paces of a simulated classroom load, with lots of apps and services deployed to 30 students, who were also streaming video at the same time. Extreme's raw performance metrics outstripped the incumbent by a factor of two or three across all areas, confirming the College's decision to upgrade.

"Technically, the Extreme Networks Wi-Fi is equally as capable as the wired network for streaming video. It's also a lot more 'sticky', by holding our users to the access points, which we've found to be important for our teachers to process SQL queries on the Student Information System. Also, we operate two separate, hyper-converged data centres in an active-active configuration and the Extreme Networks infrastructure ensures there is no lag or latency between the two sites."

"Now, with Extreme we have visibility on every aspect of the network, allowing us to drill down to quickly identify, isolate and resolve any issues. It makes my job a lot easier when I can see what's happening per port, per device from a single pane of glass. It gives us a lot of confidence in knowing what's up, and saves us hours in diagnosing any connectivity or performance issues with users or devices."

**David May, System Administrator
Somerset College**

That visibility also applies to application performance. For example, Extreme Management Center can identify that a specific application, such as an external file-sharing app, is having a slow response time. While that's outside of the College's control, administrators can notify their users that there is an issue with the application then notify them when it has returned to normal.



Flexibility, Growth, and Scale

Somerset College has grown rapidly since it was established over 30 years ago, and it's now a leader in education, both in its state and nationally. The school's IT environment has been an enabler in achieving that status.

"We are an organisation at the forefront, pushing things to the extreme - pun intended!" said Thomson.

"Extreme Networks has provided us with great building blocks for pushing IT even further. Just about anyone can do basic Wi-Fi and networking; it's what you can do on top of that in terms of security, data analytics and management that's important. With Extreme, there are continual enhancements to the software that's driving ongoing improvements for the College."

There is no longer any inhibitor from the network in terms of upgrading systems, or introducing new technologies or new types of devices into the school.

"Updating the Wi-Fi firmware used to be problematic with the post-upgrade stress of users having issues with access. We had no visibility on those issues, so we had to be really cautious about moving ahead with software upgrades. That's no longer the case with Extreme. We have the flexibility to easily move between versions," said May.

In addition, the College has the capacity to cope with the huge influx of users attending its two major annual festivals - Somerset Celebration of Literature Festival (now Somerset Storyfest) and the Somerset Celebration of Entrepreneurship.

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Lisa Thomson, Dean of Information Technologies at Somerset College

Each Extreme Networks access point can cater to hundreds of users, which the College experiences each day in its library, as well as other learning areas. However, with Somerset Storyfest (which is Australia's leading children's literature festival attracting over 5000 visiting students) the network can easily scale to cater for the increase in demand with the installation of a few extra access points in key areas.

Supporting Educational Outcomes, Now and in the Future

In addition to the benefits to the College's own IT team, the reliability of the Extreme Networks infrastructure has created a high level of trust from teaching staff in the network and IT resources, which is critical in the exponential growth in the use of multimedia and computer-based learning in the classroom, which also extends to the sporting fields and other outdoor settings on the campus.

"Our school campus is widespread with areas of the buildings that can be hard to Internet-enable but with Extreme Networks we've been able to extend our learning spaces by adding low-cost wall plate access points to those hard-to-access spaces where teachers might infrequently teach a small group of students or turn up the Wi-Fi signal to extend to an outdoor area. This creates better teaching opportunities and learning outcomes for our students," said May.

Students at Somerset College are also happy: "the feedback that we've been getting from students this year is that their experience with wireless performance is the best that it has ever been," added Thomson.

While the IT team is using the analytics and management console to manage devices and security, and to resolve issues, what really sets the school apart for the future is the opportunity for Somerset College to use the data generated by the network for new projects and technology enhancements.

"We already have a lot of visibility across our network through the Extreme Networks software tools so we can make decisions and take action based on the detailed data and analytics we receive. However, network management, particularly RF management on our wireless network, is still complex and requires both expertise and time, especially when you are a K-12 school running a BYOD program. We need to manage a lot of different devices and use cases on a daily basis, so the Extreme Networks solutions like Smart OmniEdge could simplify the configuration of switches and increase automation of the wireless network management through AI and machine learning to make life even better for us. One question we have is – how soon can we start using it?"

Lisa Thomson, Dean of Information Technologies at Somerset College



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