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Modern campuses thrive with streamlined device management

CIO

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Large colleges and universities are managing increasingly complex technology infrastructure to serve their students and run their operations efficiently. Modern institutions of higher education rely on computer networks for managing students and faculty on and off campus, keeping administration systems up to date and secure as well as supporting sophisticated research and medical facilities.

A *Wall Street Journal* report on "flagship" public U.S. universities found that median spending increased 38% between 2002 and 2020 as "Colleges invested money inside and outside the classroom, including to improve technology, expand counseling and intramural sports, and build facilities such as modern dorms and new stadiums."[1]

In addition to servers, laptops, and smartphones, increasing numbers of devices are embedded in systems crucial for environmental management; security monitoring; and managing student dorms and centers, medical and research institutions, sports facilities, and even hydration systems. That's all part of the effort to invest in "smart buildings" to improve services and cut costs through automation and digitalization. The median spending for central IT costs was $7.7 million in fiscal year 2020–2021, equivalent to $1,316 per student.[2]

Embedded devices can enhance the efficiency, safety, and quality of services and operations in these domains, but they also pose significant challenges for management and monitoring. As campuses adopt more advanced technology and integrations, they must manage and monitor access to a bewildering array of devices to ensure secure access and prevent violations of privacy regulations.

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Vast campus tech ecosystems

Today's college central and remote campuses typically encompass a vast ecosystem requiring rigorous security and efficient connectivity over an expanding network of devices, touchpoints, and data sources. One study found that more than half of students living off campus "mostly" or "only" participate online, as do 29% of those living on campus.[3]

The higher education sector spends more than $6 billion on annual energy costs and totals about five billion square feet of floor space, according to a U.S. Department of Energy report.[4] Many campuses, for example, are investing in sustainability initiatives to reduce energy and water use:

- Campuses are using green roofs to absorb rainwater and increase insulation and lights on timers to save money and energy, reports the *Princeton Review*: "Real-time energy reporting allows you to easily see the building's hour-by-hour solar electricity production as well as electricity and water consumption."[5] Some are implementing and monitoring indoor and outdoor hydration stations to replace plastic bottles with more sustainable alternatives.
- The University of Southern California implemented a comprehensive utility metering system encompassing 1,200 electrical meters, 100 domestic water meters, 70 chilled water meters, 30 heating hot water meters, seven steam boiler plant water meters, and 55 irrigation flow meters.[6]

Internet of things (IoT) devices and sensors can monitor security cameras; HVAC controls; building access; lights; power; and other critical functions, from attendance tracking to inventory management. Most colleges and universities are utilizing video surveillance systems, with many looking to adopt artificial intelligence to enable more proactive processes in real time.[7]

Many campuses provide health centers and medical services for students and staff, often adopting electronic health records, remote telehealth sessions, and online appointment systems. The privacy and security requirements for such systems are rigorous and require constant monitoring and strict access controls. Some higher education institutions house sophisticated research labs, where managing access is crucial to ensure the integrity and security of data.

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Managing the increasingly complex infrastructure

Maintaining an open environment, fostering innovation, and ensuring strict security and compliance are challenges for higher education IT teams responsible for supporting a smooth-running learning and teaching environment. As embedded devices and technology infrastructure become more intelligent and connected, colleges and universities will be able to create new learning opportunities but will face more challenges for managing and monitoring those environments.

Sensitive educational resources must be safeguarded from unauthorized users and security breaches. More hybridization of on- and off-campus learning will exacerbate secure access challenges, and IT must maintain robust authentication protocols and conditional-access controls.

Conditional, rule-based access also ensures that student and sensitive institutional data is handled responsibly and is legally compliant. This is increasingly important, given the EU General Data Protection Regulation (GDPR) guidelines, which are being emulated in other regions.

Solution for remote support

Providing IT support for approximately 13,000 on-campus students, 15,000 "Open Learning" remote students, and about 500 faculty members is a tall order for the small service desk at Thompson Rivers University (TRU), especially during the start of the school year, midterms, and finals, when call volumes increase.

The public teaching and research university offers undergraduate and graduate degrees and vocational training. Its main campus, in Kamloops, British Columbia, Canada, is supplemented with a satellite campus and a distance education division. A service desk comprising just five people provides remote access and support to 28,000 students and 500 faculty members utilizing TeamViewer Tensor.

In the fall 2023 semester, TRU rolled out a hybrid work model that saw 150 to 200 of its staff members work two to three days a week at home, further putting TeamViewer's remote capabilities to the test. "I probably spent a month licensing and configuring people's machines so their home computer could connect back to the office," says Jim Hobbs, TRU's supervisor of client technology services.

Also, he says, "Our campus is quite large, and sending an IT professional out to resolve an issue is neither sustainable nor an option anymore." The TeamViewer remote solution's ease of use enabled non-IT staffers to operate seamlessly and was used to help support the rollout of a hybrid work model in the fall of 2023, which will help the university reduce its carbon footprint.

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Cloud-based remote connectivity with a 360-degree view of all PCs, phones, headless devices, and embedded platforms in the higher education institution — both onsite and around the globe — is essential to maintain security and privacy and ease the burden on IT, operations, and admin teams, which can easily be overwhelmed by mounting responsibilities, including:

- Empowering individuals with new tools and services, such as screen sharing, chat, and voice or video calls for communication and collaboration
- Supporting devices and end users at scale with software updates and troubleshooting
- Controlling access across growing numbers of interconnected devices and systems
- Prioritizing, tracking, and managing IT workflows
- Enrolling and unenrolling students with ease so new students can swiftly get access to educational materials while access rights can easily be revoked for departing students
- Controlling the costs of providing connected services
- Integrating new tools and services with existing infrastructure
- Ensuring continuous operational capabilities amid growing cybersecurity threats such as ransomware

Growing cyberthreats

Digital transformation and the proliferation of devices have dramatically expanded the attack surfaces of all organizations, but colleges and universities with open learning environments can be especially prone to attacks.

Some IoT devices, particularly legacy systems, might be exploited to gain illicit access to networks, which can lead to theft of data and intellectual property as well as hijacking of computer resources to launch widespread assaults such as distributed-denial-of-service (DDoS) attacks.

Third-party vendors and educational partners are essential to most colleges and universities but can easily introduce security vulnerabilities into campus networks, which can compromise devices and essential services.

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End-to-end encryption, two-factor authentication, and password protection represent complementary tools and processes that can help ensure the security and privacy of remote connections and data transfers.

Administrators can manage and allocate resources, access shared documents, and collaborate in real time. The results are better coordination and cost-effectiveness across educational units.

The sporting side

Athletics is big business for many colleges and universities. It helps foster community and generate financial support from alumni, but it is expensive. In 2022, the median athletics expenses of NCAA Division 1 schools reached a new high of $30.3 million, which is only partially offset by median revenue of $8.4 million.[8]

Institutions are investing in tablets such as the iPad and the Microsoft Surface to replace traditional playbooks and bring information and video replays to the sidelines. Virtual reality and biomechanical sensors are revolutionizing training and sports medicine, with equipment ranging from football helmets to soccer bras embedded with sensors and GPS technology.[9]

Then there are the facilities: Universities and colleges are investing millions of dollars into state-of-the-art arenas and training facilities as they compete for talent, sponsorships, and enrollment.[10]

The technology has already been proven on a larger scale: One of the most iconic professional soccer clubs, Manchester United, in England, utilizes TeamViewer technology to optimize operations and fan experiences. Continuously exploring new application scenarios, the Manchester United team decided to employ TeamViewer Tensor for remote control of the irrigation systems at storied Old Trafford Stadium.

“By using TeamViewer technology, we can monitor the irrigation system and remotely set how many milliliters of irrigation the Old Trafford pitch requires at any given moment, allowing us to access and build a backlog of historic data for each section of the playing surface,” says head groundsman Tony Sinclair.

TeamViewer offers the team a secure connection to enable it to meet the ever-evolving demands of the footballing department. Operating the sprinklers remotely at Old Trafford Stadium, for example, has been such a success that the club plans to extend the solution to the 16 pitches at the Trafford Training Centre in Carrington.

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Streamlining and elevating the higher education environment

Campuses often are challenged by conflicting needs of supporting entire communities; improving efficiency and productivity; and enhancing the experience of students, faculty, and administrative staff. By monitoring and managing the performance, security, and health of all devices on the campus network, using a centralized dashboard, higher education institutions can meet these challenges.

Students and faculty can count on instant and personalized IT support. Staff training can be streamlined and accelerated. Operations can be monitored and managed remotely. Information governance can be monitored within and across institutions.

TeamViewer is a leading global technology company that provides a connectivity platform for accessing, controlling, managing, and monitoring the growing array of mobile, fixed, and embedded devices and systems found on college and university campuses. Its software has been installed on more than 2.5 billion devices around the world.

Read more about **simplifying complexity on campus**.

[1] https://www.wsj.com/articles/state-university-tuition-increase-spending-41a58100

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[4] https://betterbuildingssolutioncenter.energy.gov/sites/default/files/attachments/DOE_BBI_2021_Progress_Report.pdf

[5] https://www.princetonreview.com/college-advice/green-guide/sustainable-campus-quality-life#:~:text=Green%20colleges%20make%20a%20point,reduce%20energy%20and%20water%20use.

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