Inside Higher Ed

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Why colleges and univerisities are turning to 5G

Cost, coverage, equity and cutting-edge research offer compelling reasons to augment networks.

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Building and maintaining network infrastructure at colleges and universities is expensive. Between students who want constant, reliable access from one corner of campus to the other, to increased bandwidth needs, universities are finding their existing networks could fall short. Operating and maintaining a campus network requires continuous investment of both capital and operational dollars.

This creates a significant challenge for college and universities that are facing flat or declining revenue and increased operating expenses. Faced with a non-sustainable business model, college and university IT departments are finding ways to more effectively utilize the budget they have.

To address rising costs and increasing infrastructure needs, CIOs are looking to new options that allow them to operate a more robust network that can deliver connectivity in areas that are not accessible, or cost-prohibitive to connect via cable, or fiber, while improving student access, equity and outcomes in the process. In many cases, wireless options can augment their needs with faster speeds through a more reliable, less costly upgrade.

"Wi-Fi infrastructure is aging and may not be sufficient to meet the needs of students, faculty and staff," says Anne Clancy, Higher Education Advisor for T-Mobile. "It costs a lot of money to augment and enhance existing infrastructure in terms of wire pulling, construction costs, drywall and painting." Conversely, Clancy says, a number of factors are driving CIOs toward other connectivity options.

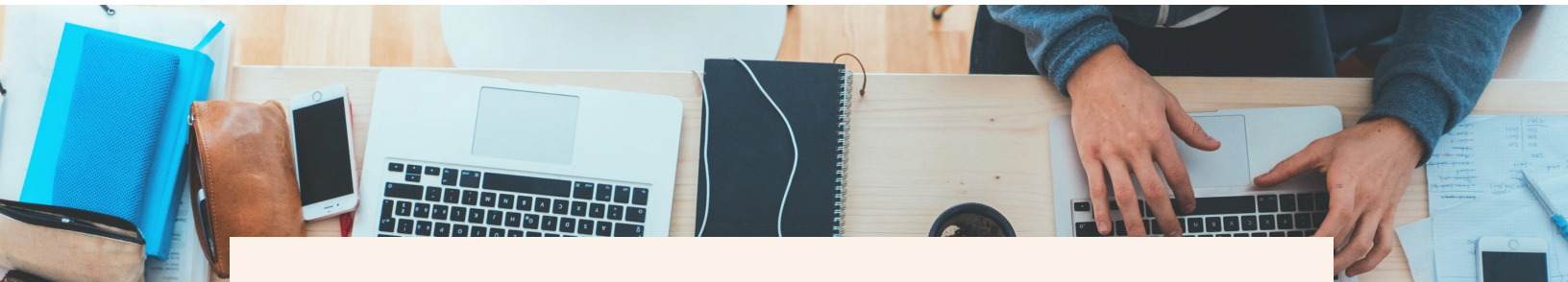
Student suffering from aging Wi-Fi infrastructure. Photo by Steinar Engeland on Unsplash

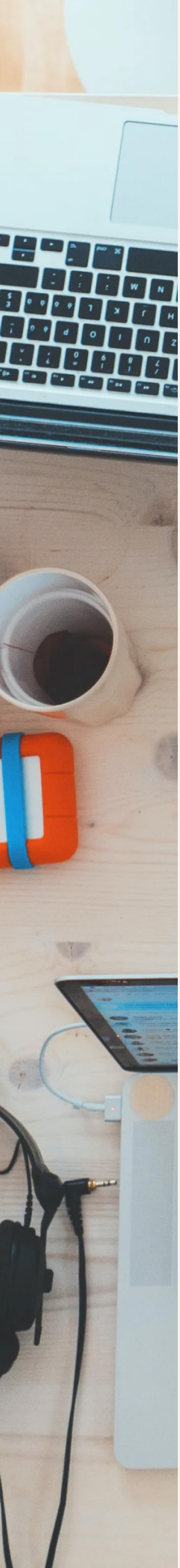
Higher expectations, lower revenue

The digital divide was brightly illuminated during the COVID pandemic. While students across the spectrum struggled with new learning formats, an alarming number had trouble even getting online. In fact, 57% of students told researchers for the New America Foundation and the think tank Third Way that they faced obstacles when accessing high-speed Internet.

While some of those pressures have eased as residential students have returned en masse, those who live on campus are voicing frustration with college and university networks, just as colleges and universities face an era of tighter budgets and declining enrollments. A recent survey from Educause found that nearly half of all students living on campus were either dissatisfied or very dissatisfied with the quality of internet service.

Yet, while accessing high-speed internet is critical to teaching, learning and research on college campuses, "running a network is not core to the mission" says Michael Kubit, higher education advisor at T-Mobile and the former Vice President for Information Technology and Chief Information Officer at Penn State University. "Economically speaking, connectivity has become a utility. Much like gas, water and electricity, advances in connectivity could transform how networks are deployed and managed. We've seen this before, it's the progression of "X as a Service (XaaS). Remember, there was a time when university IT departments created the email systems and clients used by their university, we also wrote and built all the original Enterprise Resource Planning (ERP) for student, financial and HR management. Much like we've embraced, Software as a Service (SaaS), Compute as a Service, Storage as a Service, we can now pursue Network as a Service. It's a new business model."





Expanding coverage on campus and beyond

Residential colleges and universities represent just 40% of the higher education landscape, making non-location-specific network access critical to an overwhelming majority of institutions. During COVID, community colleges expanded their networks so students could study in their parking lots if they didn't have access at home.

Now, colleges are flipping the model, turning to wireless providers for slices of their 5-G networks and giving students devices, allowing them to connect to the internet securely while maintaining that connection as they move from residence hall to lecture hall, dining hall to parking lot, work or even home. "If you put a connected device in their hands, they can learn anywhere, Kubit says"

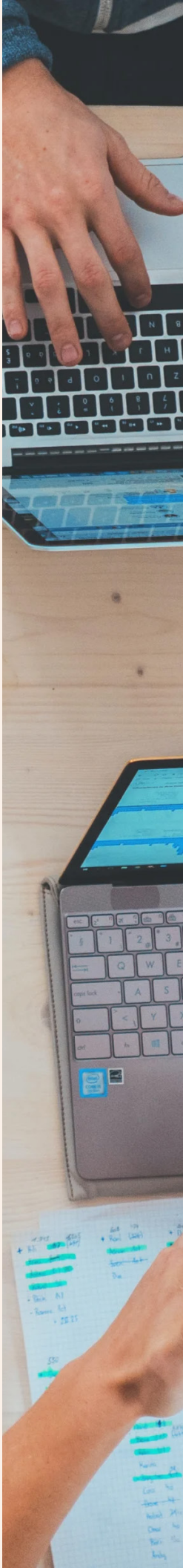
T-Mobile, for example, partnered with Peoria, Illinois-based Bradley University this fall to give faculty and a group of students, university-branded 10th generation iPads and keyboard cases as well as an unlimited access plan. By the fall of 2024, all students–including those who learn remotely–will be able to access lectures, materials and learning opportunities from virtually anywhere, without having to worry about performance.

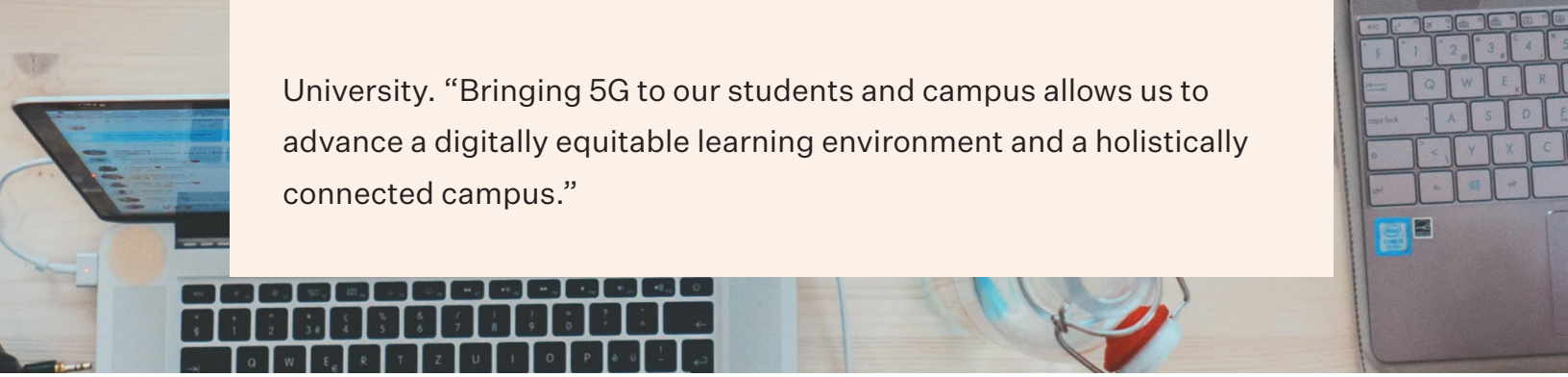
Increasing equity, driving student success

Bradley is not only improving its infrastructure, "It's increasing device equity," Clancy says. Bradley pays for the devices and access, which runs about $360 per student per year, she adds, noting that the relatively small investment can represent a fraction of the cost of upgrading and maintaining a Wi-Fi network.

Beyond more equitable access, the arrangement also gives students the opportunity to learn in an environment that mimics life after graduation, increasing their likelihood of success.

"Partnering with T-Mobile will help us provide Bradley's students with the ability to learn in the same mobile-first environment that is increasingly prevalent in the professional world," said Christopher Jones, PhD, Vice President for Strategy and Innovation at Bradley





University. “Bringing 5G to our students and campus allows us to advance a digitally equitable learning environment and a holistically connected campus.”

Cutting-edge research opportunities

Kubit sees other potential for institutions that tap into cellular networks, including those that serve rural areas or engage in agricultural research. Digital agriculture, a growing focus of land grant institutions, requires connectivity, often in remote, rural areas where fiber has yet to arrive. Precision agriculture, including precision livestock farming, often demands connected sensors and the ability to access data-rich programs that need higher speeds. Not only do these devices require robust connectivity with low-latency, 5G enables the use of edge-computing to enable the collection, storage, and processing of large, complex data sets.

Higher-speed networks also benefit research and learning on campus, especially as students and faculty utilize Extended reality (XR), Artificial Intelligence (AI) and Augmented Reality in cutting-edge research.

This kind of research may seem out of reach for overstretched campus IT officials, especially if they remain focused on maintenance and overwhelming technical debt rather than true transformation. “Embracing new business models and working to focus IT funding closer to the mission of teaching, learning and knowledge creation, should be the focus of every IT professional, “Kubit says. “Looking at new ways to deliver connectivity can enable a focus on strategic IT innovation.”

Balancing needs with opportunities

To be sure, campus leaders will face a series of unprecedented challenges in the coming years. The pressures of declining

enrollments and budgetary uncertainties will couple with the need to increase equity and innovate to stay relevant. Removing the hassles of costly network maintenance can help them stay focused on core mission areas as they look forward to the future.

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