The Case for Modernizing IT Infrastructure in Higher Education.

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The Time for Modernizing is Now.

There's no escaping the current digital transformation in higher education, even if you wanted to. It's impacted every student, educator, administrator and staff member on Earth, picking up particular speed in the past few years and forcing leaders to reform just about every element of the learning experience.

At the forefront of the transformation? Technology — leaving IT teams with no choice but to lead the way and forge the best path forward for their colleges and universities. There's just one problem. A paradox exists in that while there's more pressure than ever on higher education institutions to evolve and innovate, the systems in place just aren't up to snuff.

Many colleges and universities are behind the curve when it comes to IT infrastructure, especially in comparison to other sectors like business. Aging data centers and outdated systems aren't equipped to provide a modern experience for students and faculty members. And if we think of students and faculty as 'customers' and campus technology as the 'product', the offering doesn't align with expectations.

If there's ever been a time to modernize, that time is now. As they say, evolve or become extinct. Easier said than done, we know. While arguably one of the most important segments of a higher ed institution, little more than an **average of 4% is spent on IT**. Without much choice in the matter, doing more with less is often the modus operandi of IT teams.

The good news is, the options to modernize are applicable to a range of situations, capabilities and budget constraints. Some aging facilities may need improvements such as more space, more efficient cooling, or more flexible power infrastructure. Others could benefit from standing up new microdata centers or even large-scale central data facilities. The point is, modernization can be scalable. You just have to pick the path that works best for you.

In this eBook, we'll cover the following topics:

- Higher education trends driving the need to modernize
- The benefits of modernizing IT infrastructure
- The steps you can take to modernize

Higher Education Trends Driving the Need to Modernize.

IT teams know that in higher education, it's all about uptime and managing assets. That can be difficult, especially when those assets are spread across a large geography or sprawling campus. The campus is a dynamic setting that serves the needs of so many diverse stakeholders. For IT teams, there's a constant pressure to accommodate those needs and create an optimal learning environment that's attractive.

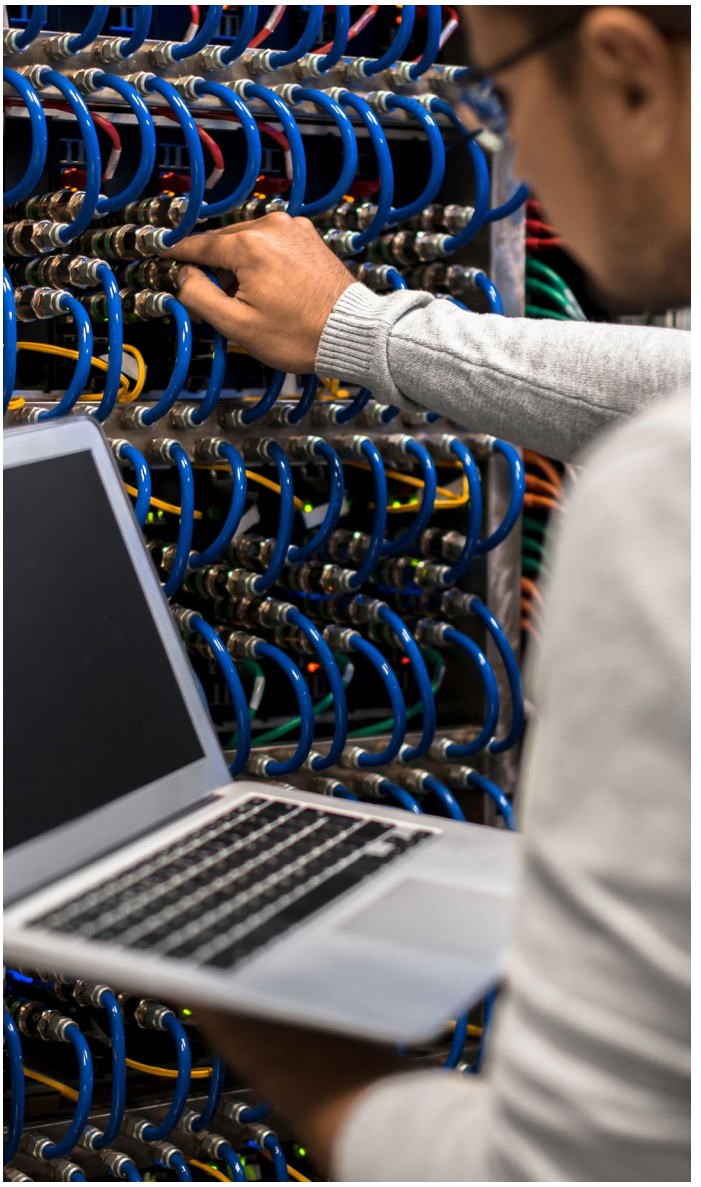
On top of that pressure, there are several trends that will test the strength of your IT backbone.

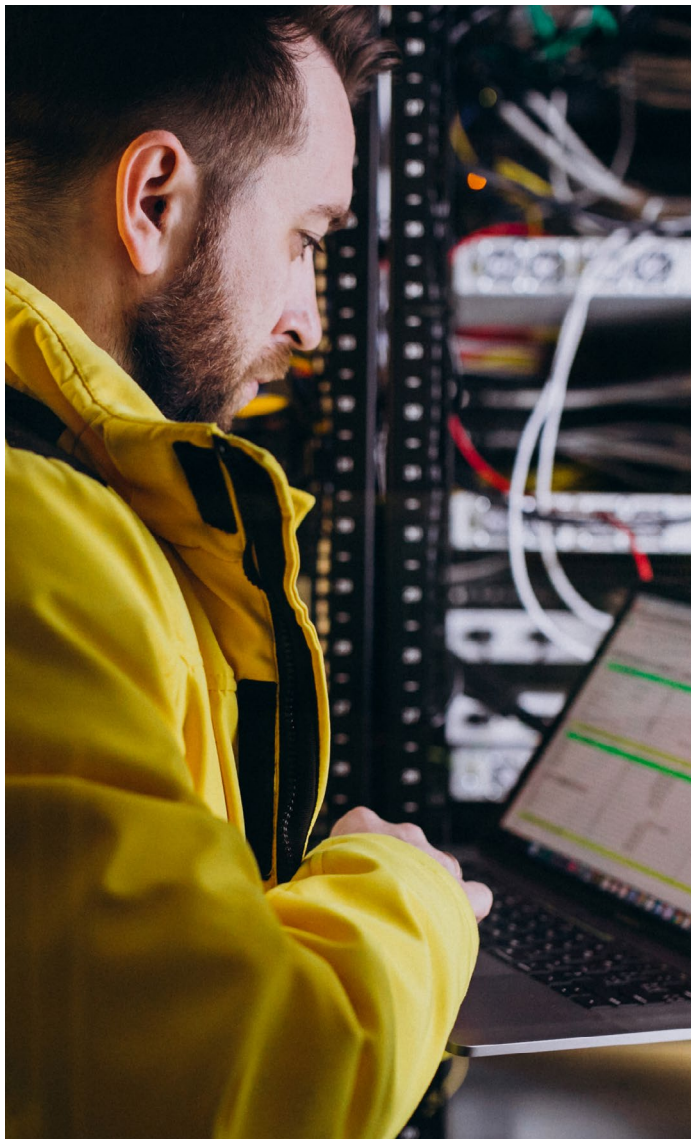
Large Scale Online Learning.

Even before the COVID-19 pandemic, the education sector, like many other sectors, was growing more comfortable with a hybrid environment that accommodated more online learning. In fact, global investments in online education technology including virtual learning, video conferencing and other online learning software totaled **$18.66 billion in 2019**. The overall online education market is expected to reach **$350 billion by 2025**. The transition was certainly accelerated in 2020 by force, and today millions of students have become accustomed to getting an education from their online courses, and **many even prefer it** to traditional classroom settings. The ability to support this new era of learning requires IT system resiliency and high availability.

Transformative Learning Tools.

In line with other modern experiences as consumers, students and faculty expect a frictionless yet engaging experience on campus. As leaders in higher education consider the acceleration of technology to improve the experience for both faculty and students, there's emphasis on trends like **systems of engagement**, aimed at enhancing engagement and improving the quality of learning. Some institutions are moving toward a **'tribrid' model**, one that incorporates a blend of in-person, online and simulated teaching. The pace at which technology is evolving education, making learning more immersive, requires agility, flexibility and scalability in infrastructure.





Non-Negotiable Reliability.

Uptime – the most important thing on campus and your biggest priority. You know today's demand on bandwidth has never been greater. From the moment students step foot in their dorms for the first time, they demand perpetual connectivity for all of their devices, anytime, all the time. Yet, according to a national survey from EDUCAUSE, **77% of students said they experienced technical issues over the 2021-22 academic year.** The goal is 99.999% reliability of connectivity and your infrastructure had better be growing in proportion to the need. No exceptions.

The Supercomputer Race.

Colleges and universities have always played an important role in conducting research that drives change in the world, making them perfect hosts for powerful supercomputers capable of processing highly complex data. The investment in supercomputers attracts students and educators who want to be a part of groundbreaking research that makes headlines. So, with colleges racing to be among the nation's elite, the urgency to bring data centers up to supercomputer capacity is amplified.

Growing Connectivity of IoT.

As higher education institutions try to sharpen their competitive edge, many are moving to achieve **'smart university'** status, characterized by building a technology-driven environment to provide advanced learning experiences. IoT plays a critical role in offering students and faculty the accessibility of a smart campus. Boosting the connectivity of a campus can only be successful if it has the bandwidth to accommodate.

On-Campus Occupancy Variation.

There's always been a natural ebb and flow of students and faculty members coming and going. With the acceleration of hybrid learning, that on-campus occupancy variation becomes difficult to predict. Do you have the infrastructure in place to accommodate surges? Can your racks bear the load? Are your cooling mechanisms strong enough? Then there's game day, when thousands of fans convene on campus for a single event. There's an expectation that all of the devices each fan brought with them, plus the multi-media technology they experience at these events, will perform without glitch.

The Case for Modernizing IT Infrastructure for Higher Education.

The pressure on the IT backbone translates to pressure on the IT teams supporting it, but all that pressure to evolve and modernize is fortunately met with benefits. It's those benefits that can then translate into the below business cases for leveraging bigger IT budgets.

Attract Top Talent.

Colleges and universities are always looking for ways to differentiate themselves, to beat out the competition and attract talented students, researchers and faculty. There was a time when IT played only a basic utility role on campus. Now, in the midst of the Fourth Industrial Revolution, there's an opportunity for IT teams to leverage technology to their competitive advantage and boost recruiting with a higher caliber experience.

Bolster Security.

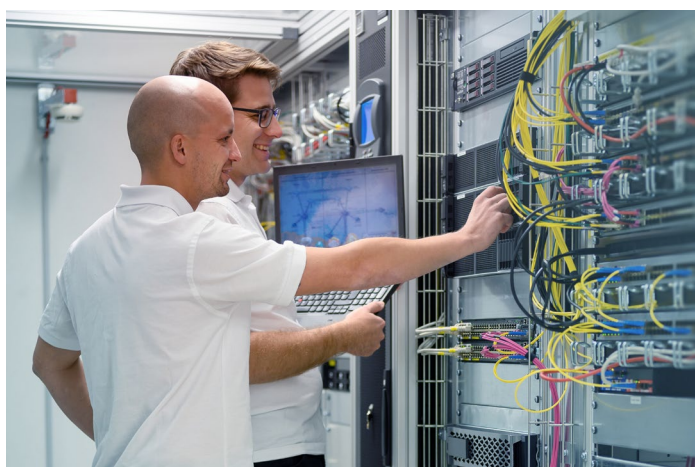
Maxing out central data centers and dedicated edge sites has forced IT teams to get creative with the space available on campus, which can mean sharing becomes necessary. There is no **digital security without physical security.** With edge sites in particular, physical security is everything. You can't know exactly who is accessing those spaces without the proper monitoring tools. And you can't manage if you don't monitor. Part of modernizing means giving your equipment the monitoring tools to keep it secure, especially when you can't be there to keep an eye on it yourself.

Improve Efficiency.

You may be managing hundreds of IT sites on campus and a very small team to support them all. Or maybe your team experiences high turnover. In any case, staying organized is vital to successfully managing your full network. Standardizing your equipment as you modernize can be helpful when it comes to passing the baton. Rather than relying on impossible-to-track institutional knowledge of legacy equipment and having to hit the restart button year after year, you can maintain a more holistic, streamlined view of your system.

Drive Sustainability Efforts.

Naturally, many IT components become less efficient with age. And legacy equipment in general may not be as efficient as more modern solutions. Updating to solutions that run more effectively and efficiently can equate to reducing energy consumption and contributing to overall on-campus sustainability goals, especially if you implement a monitoring system that allows you to track and measure your department's energy consumption. With a monitoring system, you can also support a stronger lifecycle for your IT network by keeping tabs on the health and performance of your equipment, stretching components to their optimal lifespan.



How to Modernize your Higher Education IT Infrastructure.

If you're like most IT pros, you're dealing with aging, legacy infrastructure, lack of space and a shrinking team, in a moment that demands the opposite. The goal is to respond to future capacity changes with agility, reliability, scalability and efficiency. So, how can you get there?

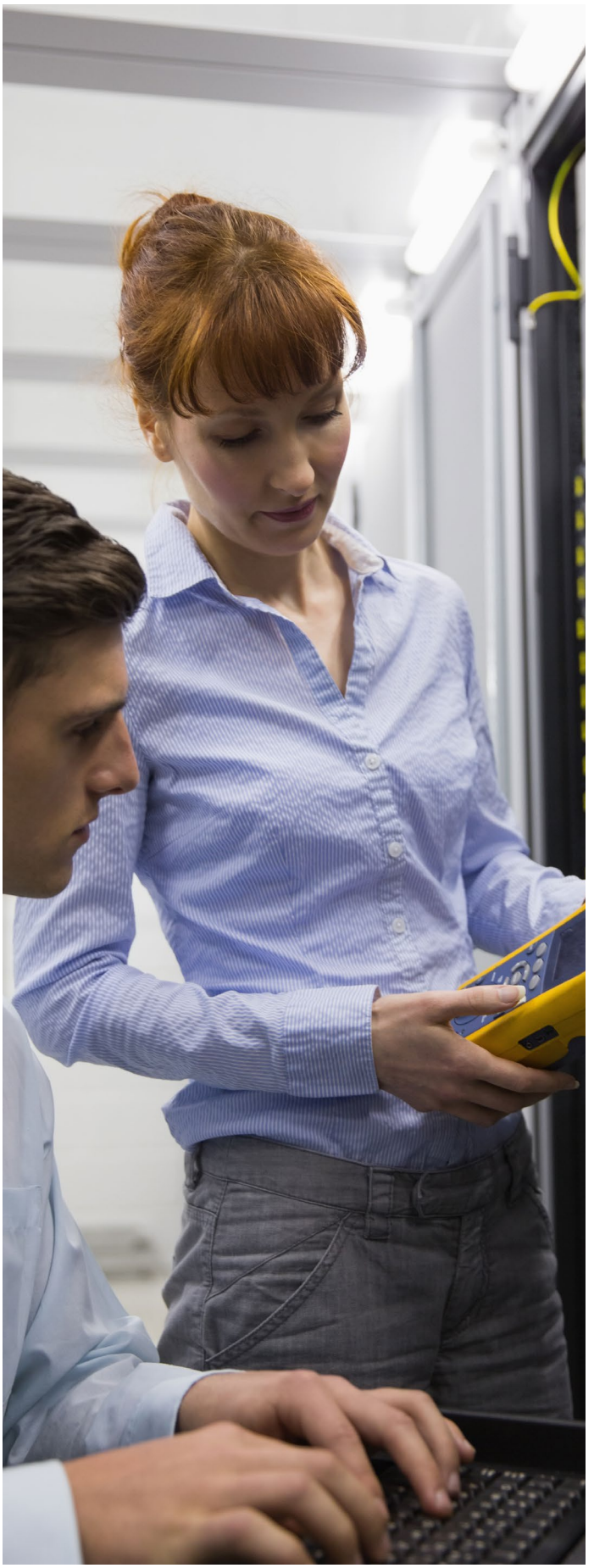
In this section, we'll cover steps you can take to modernize, even on a tight budget.

First, Take Inventory.

Evaluate your existing infrastructure. To determine whether or not you need to deploy more capacity, start by taking stock of your servers, networking gear, UPSs, cooling units, racks and power distribution units. You may find it's time to standardize.

Deploy Updates Incrementally.

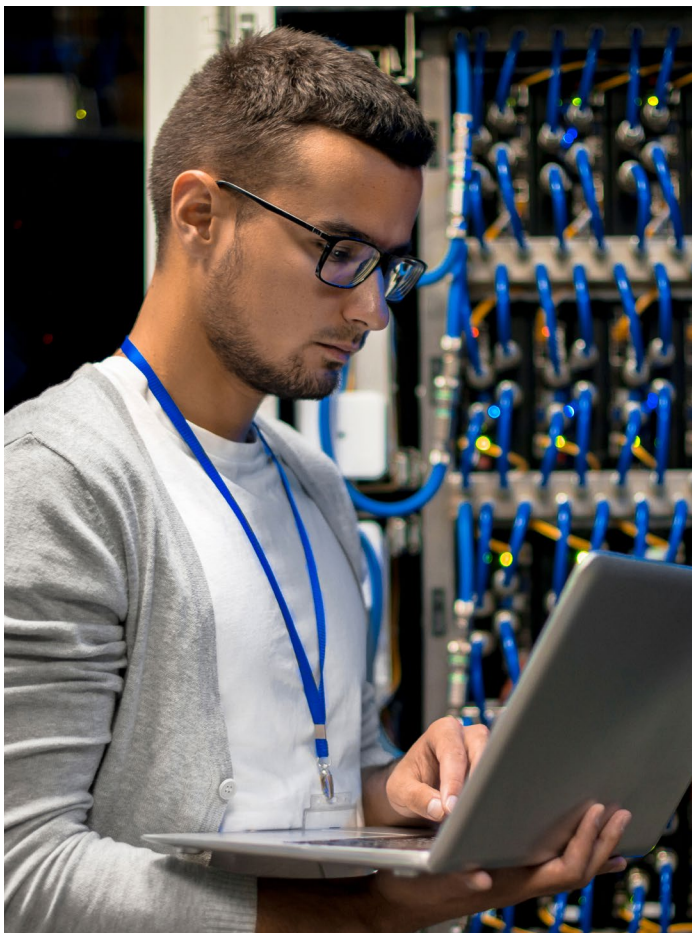
Maybe your CFO is unable to authorize CapEx for major data center updates, leaving your team with minimum investment opportunities. With a scaled-back approach, you can buy time, maybe a year or more, by still taking steps to improve it on a limited budget. For example, maybe you're planning to add 20kW of additional power in anticipation of increased enrollment for the coming semester. You can deploy power and cooling modules incrementally. Scalable power and cooling products enable you to size to your specific needs without over-deploying. If you're running out of power capability in your data hall but there's still room to spare, adding just one or more **high density pods** offers a modern, modular approach to updating and can extend the life of a facility.



Expand Computing Capacity at the Edge.

IT systems across university campuses are becoming more and more distributed by the year. Gone are the days of one central data center. Beyond the data center, spaces all over campus are housing microdata centers to support **edge computing**. By 2025, **Gartner predicts** that 75% of enterprise-generated data will be created and processed at the edge where you can:

- Standardize your infrastructure
- Support you overloaded networks (especially during peak on-campus hours)
- Isolate disruptions and avoid major system failures
- Maximize computing speed and efficiency by being closer to users
- Save on costs by storing data locally, **compared to cloud computing**



If you've already taken stock of your sites and equipment, you can determine if you have the capacity to add more **edge computing sites** to particular areas with enough security, safety, airflow, etc., and start to deploy them. You may be dealing with limited real estate and need to maintain a small footprint. Deploy **smaller UPSs** and **space-saving racks** that can manage dense loads and still provide adequate airflow. If you need to get creative with your space by adding racking equipment to shared areas, there are racks available that even mimic furniture to blend in with the environment they're sharing. As you start to replace equipment or plot new edge sites, it's important to standardize your solutions across the board to help simplify management.

Monitor, Manage, Maintain.

Whether you're updating equipment in your central data center, deploying new distributed IT sites or simply replacing UPSs, it's important to know what you have installed and where, to maintain both a holistic and comprehensive view of your full network. If not in place already, you should be utilizing or updating your data center infrastructure management (DCIM). It's an important tool that combines IoT-enabled products like UPSs and cooling units with software that monitors product performance. This enables you to manage all of your sites remotely and more efficiently to identify any equipment behavioral anomalies that require maintenance. Especially with limited staff, or perhaps staff that isn't adequately trained, and growing loads, you can still ensure visibility and control.
With modernized monitoring systems, you can:

- Detect hotspots
- Diagnose issues quickly
- Minimize trips to investigate sites
- Spot energy waste
- Identify ideal locations for new IT capacity
- Prevent downtime

Schneider Electric offers both a physical layer and logical layer of monitoring. A physical layer of smart, scalable monitoring solutions like **Netbotz** offers intelligent pods, cameras, rack access controls, and sensors that enable you to swiftly detect environmental threats like humidity, flooding and fire. Paired with the physical layer, a logical layer of monitoring like **Ecostruxure IT Expert** enables around-the-clock remote monitoring of sites and equipment for full visibility into performance, efficiency and security so you prioritize failure prevention and resolve issues quickly.

As mentioned earlier, monitoring your equipment is another way to boost your sustainability efforts. With physical and logical monitoring, you can keep an eye on the health of your equipment and stretch its lifespan. For example, typical battery life hovers around three years. With the right monitoring in place, you have the ability to understand the true health of your battery and its potential based on data points that track load and temperature. If your battery is bearing a lighter load and the airflow is healthy, you could get more than the average three years out of it. You shouldn't be dumping equipment before it's really ready to be replaced. I nstead, get the most out of the equipment you have. This is another area where standardization becomes important. It will be simpler to manage your sites with an all-in-one solution rather than trying to figure out how to integrate point products into a greater system.

Build a New Data Center (If Budget Allows).

In some cases, if the space and power is completely depleted, it can sometimes be more efficient and beneficial for the long-term infrastructure to stand up an entirely new data center. And while a modernized data center can operate more efficiently and cost-effectively over the years, there is of course quite a bit of CapEx that goes into its initial development.

Evolve with an Innovative Partner.

A lot is transforming in the higher education space and we can't say for certain what it will look like in the next few years. What is certain is having an innovative partner at your side, who works within your budget and capabilities to deploy the most efficient solutions possible will make all the difference.

To help determine what you can do with the budget you have, **Schneider Electric** offers **TradeOff Tools™** that help IT teams evaluate opportunities and assess the best path forward.

It's time to evolve or become extinct — find a partner you can evolve with.

Contact Schneider Electric to learn more about our efficient, **sustainable**, scalable solutions to meet any needs, whether you're looking for immediate changes or planning for the future.

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We can help you tackle anything, from basic preventive services all the way to redesigning your permanent IT backbone.

Call us at 1 (877) 800-4272 to get started, or check out our partner selector tool to find a partner ready to support you.

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