



How Higher Education Institutions Can Modernize their LAN

Innovation proven to help colleges and universities achieve a necessary part of digital transformation: upgrading their IP systems at low cost and with minimum disruption.

Higher education institutions need digital transformation — now. As part of this process, they can move from legacy to enhanced Internet Protocol (IP) capabilities in a cost-effective, simple and secure way, and use a government grant to do so.

To provide economic stimulus in the wake of the COVID-19 pandemic, the U.S. government passed the American Rescue Plan (ARP) in 2021. As part of the plan, institutions of higher education (IHEs) can apply for grants from an allocated amount of \$40 billion to fund digital transformation initiatives and infrastructure upgrades.¹

Given that this funding is set to expire in 2023, now is the time for IHEs to invest in an efficient IP upgrade process that takes their specific challenges into account, while maximizing return on investment (ROI).

The Demands on Higher Education Institutions

Even before the pandemic, IHEs were under increasing pressure to do more with less. On the one hand, they have to contend with aging infrastructure and dwindling budgets. On the other hand, digital transformation is becoming a pressing need.

Moving from legacy to IP assets is part of the transition toward digital maturity as it helps IHEs do more, better. Better surveillance, better communication and collaboration, better monitoring of assets and better intelligence with which to make decisions.

The question higher education institutions are asking: “How do I connect the new IP endpoints in a simple, secure and cost-effective manner?” The answer: Apply modern LAN design technology to today’s problems.

The Challenges of Migration from Legacy to IP

While the case for migration from legacy to IP infrastructure is clear, the process is anything but, says John Croce, president and CEO at NVT Phybridge.

Over the years, IHEs and other organizations have started to embrace the Internet of Things (IoT) and add more devices to the network, resulting in more network complexity, less reliability and an increase in security breaches. The process has been time consuming with sometimes lackluster results. There is a good reason why: Too often, these organizations are using traditional

LAN design techniques established over 30 years ago to solve today's IP problems.

"A big part of the challenge is that LAN design principles and Power over Ethernet (PoE) switch capabilities have not kept pace with innovations in the field," Croce says.

Traditional approaches to LAN design are crippling progress.

Myths abound. One such misconception is that an institution needs entirely new cabling and address network infrastructure requirements to modernize to IP given the reach and cable type limitations of standard ethernet switches (328 feet or 100 meters and CAT5 cable or better).

These outdated theories have taken hold, Croce says. As a result, organizations believe, among other things, that they have to rip out old cables and add a gigabit port for every endpoint. It's a blunt-force approach that leads to:

- Higher network costs
- More complex networks, which increases demand for skilled talent
- Cybersecurity risks
- Disruption because aging infrastructure has to be dealt with
- Time delays

The Advantages of Modern LAN Design

It does not have to be this way, Croce says. He quotes Einstein: "You can't solve a problem with the same kind of thinking that created the problem."

Instead, use an outside-in approach, which modern LAN design advocates. Consider the network endpoint requirements first. Does every camera really need a gigabit? It does not. Factor in power requirements, environmental costs, security concerns and users into the network design. We need to "incorporate modern LAN design into intelligent network solutions to connect IoT endpoints," Croce says.

Because PoE network innovations solve reach limitations and cable type restrictions, IHEs can work with what they have on hand. They do not need new cables, and they do not need to rip and replace infrastructure to add IDF closets, cooling, power, backup power and rack space. There are no additional demands on IT, voice and security staff.

Using modern LAN design empowers IHEs to develop intelligent IP network solutions that are:

- **Cost-effective.** They end up being 40 to 80 percent less expensive than those based on traditional LAN principles.
- **Less disruptive.** Colleges do not have to rip out old cables and tear down walls to accommodate IP networks.
- **Easier to maintain.** And they require fewer staff.

- **More secure.** Modern LAN allows easier quarantining of endpoints so threats can be isolated before they bring down the entire network.
- **Custom.** Network solutions can be designed from not only the endpoint and application IHEs are looking to deploy, but from a broader network view specific to the problem at hand.

Such modern LAN network design solutions need not be limited to institutions starting the migration from scratch. Very often, IHEs have not completed the IP migration to all endpoints. For example, the application might be IP, but the endpoints may not, as colleges are worried about disruptions and costs. Modern LAN design completes the digital transformation process because it effectively eliminates any barriers in place.

IHEs can also choose to upgrade to IP assets using a unified network-as-a-service model. In such a case, the funds could come out of an operating expenses budget rather than tie up capital expenditure fluidity in such an investment. IHEs can also use grants from the ARP to fund these upgrades, and use modern LAN to maximize ROI.

Conclusion

"We need to accelerate the move to an IP-based solution; collapse planning, configuring and deployment times; and eliminate high costs, risks and network complexity," Croce says. The mantra, "Accelerate, Collapse, Eliminate" is extremely relevant for today's legacy to IP migration. And modern LAN design can help higher education institutions get there.

IHEs need no longer be boxed into traditional ways of thinking. They need not accept the limitations of standard switches and a network topology that were never designed for real-time application.

"By leveraging new principles and PoE innovations that allow you to use different cable types at greater distances than standard switches, organizations can leverage their proven reliable infrastructure and transform it to a robust PoE path for their new IP devices with no impact on the core network," Croce says. "You're changing the equation to maximize return on investment."

And for colleges and other institutions, that is a lesson worth learning as they pave the way for a new way of education. They can use ARP funding to get started and with modern LAN, maximize ROI and stretch their dollar even further.

This paper was written and produced by the Center for Digital Education Content Studio, with information and input from NVT Phybridge.

Endnotes

1. <https://www.nea.org/advocating-for-change/new-from-nea/american-rescue-plan-whats-it-higher-education>

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