



CASE STUDY

Empowering Education with Robust Connectivity



Kentucky State University (KSU) was chartered in May 1886 is a public, research-comprehensive, historically black 1890 land grant institution. Located in Frankfort, Kentucky – the state capital – KSU offers associate, baccalaureate, master’s and doctorate degrees. The university’s 1,100-acre campus includes a 301-acre agricultural research farm, a 306-acre environmental education center and a 106-acre research and demonstration facility. KSU has more than 100 full-time instructional faculty members and approximately 2,300 students.



The challenge: Modernizing KSU's Aging Fiber Optic Network

It's hidden from view, tucked away underground and behind campus walls, but the importance of a university's network infrastructure cannot be denied. And when that network is 20+ years old and daisy-chained between buildings with no redundancy, it poses a significant risk of catastrophic failure.

Dr. Wendy Dixie, Vice President of Information Technology at Kentucky State University (KSU), found herself facing that situation at Kentucky State University. As she explained, "We understood that to be resilient, to be available 99.99% of the time, we must build an environment and infrastructure that supports that."

KSU recognized the importance of a strong infrastructure to support their academic and technological goals. Dr. Dixie emphasized, "Our strategy is to ensure that we are providing affordable access, student success, sustainable environments, and transformative engagements." To achieve this, it was essential to address the outdated fiber optic network backbone that had been in place for over 20 years.

With most campus buildings connected by a single Multi-Mode fiber optic connection, the connectivity speeds were limited, unable to meet the growing demand for online access and digital resources. The lack of redundancy in the network further put services at risk.

Additionally, Dr. Dixie recalled, "The number of devices students connect to Wi-Fi has grown from 1-2 up to 10 everything connects, from phones to Echo Dots, iPads and even more." This escalating demand for connectivity necessitates increased bandwidth.

Key results

- **800** wireless access points
- **85,000** feet of new fiber
- **13** campus buildings upgraded to new cat6 cabling
- **3900%** increase in Wi-Fi speed
- Delivered project **2 months ahead of schedule**

"This investment in our network infrastructure is a critical step forward for KSU."

Wendy Dixie
Vice President,
Information Technology,
Kentucky State University



C1 has been a trusted partner of the university for over four years, providing support for various projects such as wiring in campus buildings and replacing core equipment. Given their established relationship, it was a natural progression for KSU to turn to C1 once again to address the next phase of their technological evolution.

The solution: C1 Infrastructure Experience Powered with Extreme Networks Paves the Way for Next-Gen Learning

To address these challenges and provide a robust network infrastructure for the future, KSU partnered with C1 on an ambitious project. The C1-recommended solution involved upgrading the campus's existing Extreme Networks' fiber optic Internet. The main goals of the project included:

- 1. Upgrade to Single Mode Fiber:** Upgrading the existing multi-mode fiber to single mode fiber allowed for virtually unlimited speeds between campus buildings and hubs. Each campus building now had a minimum connection of 10Gbps, providing a significant boost in connectivity and data transfer capabilities.
- 2. Creation of Campus Hub Locations:** Five campus "Hub Locations" were established, interconnected with multiple paths of fiber to enhance reliability and resiliency. Their legacy fiber supported speeds of 1Gbps at best. The new install brings that number to 40Gbps and beyond, representing a 3900% increase in speed!
- 3. Network Refresh and Infrastructure Upgrades:** C1, a Diamond Elite partner of Extreme Networks, performed a comprehensive network refresh. This included installing over 100 network switches and 800 wireless access points. Additionally, more than 85,000 feet of new fiber was installed to upgrade the legacy infrastructure, resulting in increased speeds and redundancy. Numerous campus buildings also underwent upgrades to new Cat6 cabling.

"This investment in our network infrastructure is a critical step forward for KSU," said Dr. Dixie. "It not only provides our students and faculty with a high-quality educational experience, but it also positions us as a leading institution in technology advancements."

The result: KSU Achieves Success with C1 and Extreme Fiber Implementation

The collaboration between KSU, C1, and Extreme Networks has yielded significant results. The project was completed two months ahead of schedule, allowing KSU to promptly provide improved network access to its students.

In the residence halls, access points have been strategically placed in every room, rather than their previous hallway locations that often led to dropped connections. There has been a 220% increase in coverage for the campus. Student satisfaction surveys and town hall meetings have generated no complaints regarding internet speed or access.

With the modern infrastructure, KSU can now focus on its strategic goals, including the launch of the KSU online program. Dr. Dixie highlighted the impact on the educational experience, noting, "Outages have virtually disappeared. If one were to occur, we'd be able to determine where it is and take care of it immediately because of the way the topology is now set."

"To have a relationship and trusted partner who really cares about the outcome and the organization is very important to me," said Dixie. "I have the highest regard for my C1 and Extreme client executives and their teams, and the changes we've had over the years."



C1 designs and delivers technology solutions built for outcomes. We focus on communications, networking, and cybersecurity—pairing leading partner platforms with our advisory, professional, and managed services to make modernization practical, secure, and valuable from day one. Where others talk about transformation, we make it real—faster, simpler, and more resilient. Learn more at onec1.com.