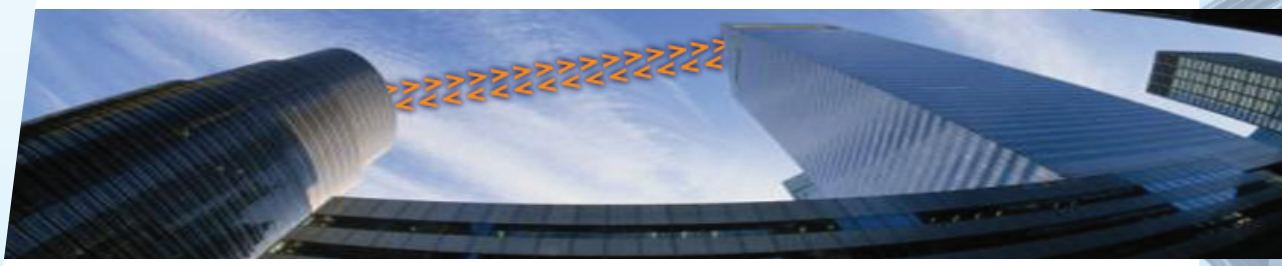
BridgeWave
COMMUNICATIONS

Case Study

CORNELL UNIVERSITY



CORNELL UNIVERSITY SELECTS BRIDGEWAVE AS PREFERRED PROVIDER FOR WIRELESS NETWORK HARDENING

Cornell University

Founded in 1865 and located in Ithaca, New York, Cornell University is one of two private land grant universities, and a member of the prestigious Ivy League. With more than 20,833 enrolled students, Cornell University is recognized for its founders' revolutionarily egalitarian and practical vision of higher education.

After many universities suffered massive network outages due to Hurricane Katrina, Cornell University went through an intensive network hardening exercise to strengthen the data network. The University's network consists of several miles of inlaid fiber and the team located a point of failure in the fiber network. To minimize potential connection problems, Ed Kiefer, manager of data networking for Cornell, initially researched a fiber redundancy solution to strengthen the network, but the $2 million price tag was more than the college had budgeted for hardening the network. Kiefer and his team then sought other redundancy options to fiber.

"Our fiber network was vulnerable to outages – and that was unacceptable for Cornell. Our staff and students rely on rock solid connectivity to execute critical research. We needed to locate an affordable backup solution to ensure seamless network performance in the event of outages to our primary network."

"As an Ivy League institution, Cornell's network must run twenty-four hours a day, seven days a week in order to provide the ability to perform research at all times. Hurricane Katrina demonstrated how important a reliable disaster mitigation program was, and BridgeWave's wireless links have provided our staff and students uninterrupted access to a dependable and secure network connection when issues affect our primary fiber connections."

Ed Kiefer
Manager of Data Networking
Cornell University

THE CHALLENGE

Cornell University required a high capacity fiber-equivalent connectivity solution to serve as a network backup to supplement the occasional vulnerabilities in their fiber network.

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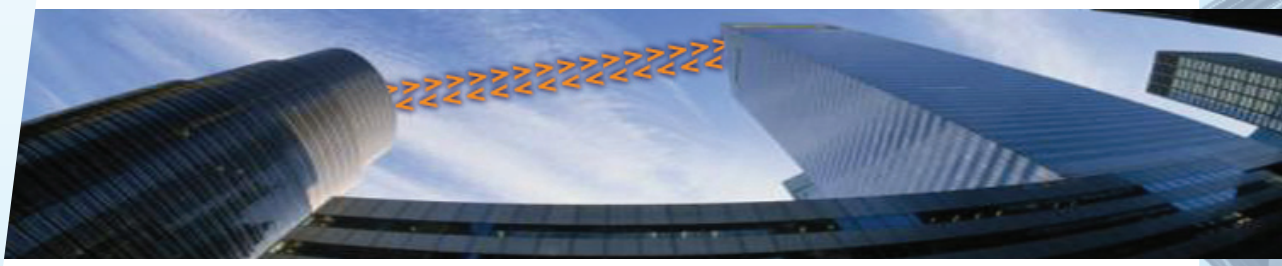

In seeking a solution, Cornell University sought to address the following issues:

- Finding a solution that would provide reliable, unwavering network connections, regardless of inclement weather
- Offering future-proof, high bandwidth technology to guarantee maximum high network capacity in the coming years
- Ensuring security features protected proprietary staff and student research from network tapping
- Find a reliable alternative to fiber as fiber infrastructure estimates ran upwards of $2 million
- Meet regulations from Ithaca Landmarks Preservation Commission that prohibit visible antennas on historic campus buildings

THE SOLUTION

To ensure network reliability, Kiefer researched point-to-point wireless technologies; however most products provided insufficient bandwidth for the transfer of voice, video and business-critical education applications. Kiefer contacted TESSCO Technologies, a value-added supplier of the product solutions needed to design, build, run, maintain and use wireless systems. TESSCO identified three technologies, including BridgeWave's, and set up a 'bake-off' to determine which product best supported Cornell's network. The University selected BridgeWave's 60 GHz products over another millimeter-wave manufacturer and a Free Space Optics (FSO) competitor.

Kiefer selected BridgeWave's AR60 product based on the high level of security, reliability against severe weather, and the generous bandwidth a gigabit of data capacity provides. Cornell used the 60 GHz wireless links to augment the vulnerable fiber link and to serve as a backup for their other network links.

"We sought a wireless solution to supplement our fiber link, however most products we encountered could not accommodate the large amount of data being transmitted through our network. When we learned that BridgeWave's AR60-AES and AR60X-AES radios were able to support a gigabit of data we knew the product would be able to support the many applications running simultaneously on our network."

As Cornell is located in Ithaca, New York, weather was a large factor when considering wireless products and as an Ivy League institution, Cornell University requires network availability twenty four hours a day. BridgeWave's AdaptRate™ (AR) products ensure continuous network connectivity, despite inclement weather, including snowstorms or heavy rains. The AR radios momentarily switch transmissions from GigE to 100 Mb/s data rates during intense or violent weather patterns or during moments of torrential downpour to maintain a highly available link.

In addition, maintaining the highest level of security was a top priority for the University. Since the University must ensure staff member and student research is not "tapped," BridgeWave's included security measures

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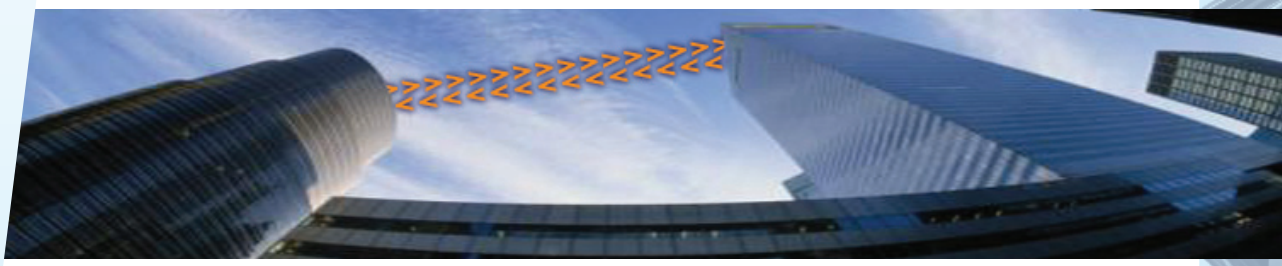

appealed to Kiefer. Since the radios operate in the 60 GHz spectrum, traditional security risks associated with lower-frequency wireless transmissions platforms are mitigated. The product's extremely narrow beamwidths make signal interception virtually impossible. As an added measure of security, Cornell chose to encrypt all transmissions using the internal 256-bit AES option provided by BridgeWave.

"BridgeWave's security offerings stood out among other wireless companies. Our network houses proprietary research from students and staff alike. Cornell University maintains the highest level of security for all transmitted information and cannot tolerate potential 'tapping' of a link."

In Spring 2008, Cornell University began the process of deploying nine AR60-AES radios. They also saved a backup AR60-AES radio in case of network failure or if a building on campus gets severed from the network. The total deployment was completed in early October 2008 and Cornell continues to be impressed with the reliability of the AR60-AES product.

"BridgeWave was fantastic to work with – their staff members are approachable and extremely educated about the product. Upon deploying one of the radios, we weren't able to find the correct alignment. We asked BridgeWave for a root cause analysis and received it back immediately. Their recommendations were so on point that we made modifications to our original design and had the link up within hours."

THE BENEFITS

Since being deployed, BridgeWave's AR60-AES and AR60X-AES links have provided seamless network connectivity as a backup to the primary fiber network. Despite heavy rainfall, the network has never dropped a connection; in the event of harsh weather the radio is merely throttled down to 100 Mb/s. Cornell staff and students are pleased with the security functions that this product offers, and the University now rests assured their research on the network is secure.

"Our deployment of BridgeWave's AR60-AES and AR60X-AES products was an incredibly smart decision. Not only have we saved close to $1.5M by using gigabit wireless rather than fiber, but we have done so while ensuring our network remains secure – something that has always been imperative to Cornell University."

Given BridgeWave's gigabit of data capacity, the product also allows for future growth at Cornell University.

"We purposefully selected a product that would grow with our network. BridgeWave's high-capacity gigabit links provide our University with ample bandwidth for data transfer including voice or video traffic."

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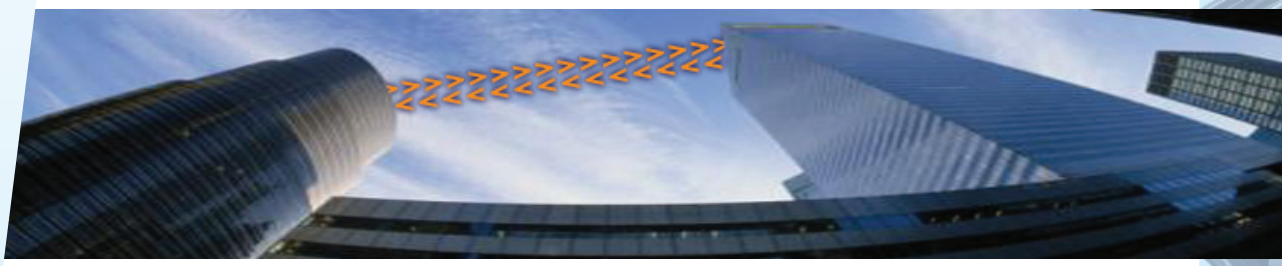

CUSTOMER: Cornell University based in Ithaca, New York (http://www.cornell.edu/).

INDUSTRY: Higher Education

CHALLENGES:

- Meet high bandwidth requirements to transmit sensitive data, including voice and video
- Prevent network tapping to secure network connection for proprietary research
- Locate a reliable fiber alternative as projections for fiber installation ran upwards of $2 million

SOLUTION: Nine BridgeWave AR60-AES and AR60X-AES links.

SYSTEM INTEGRATOR: Trispec Communications, a leader in the development of customized solutions in the areas of broadband cable, telecom and wireless (http://www.trispec.com/Home.html).

BENEFITS:

- Establish immediate connectivity with fiber network at point of vulnerability
- "Future-proof" network for upgrades or additions with Gigabit of available bandwidth
- Provide "tap-proof" network security with narrow beamwidths in 60 GHz spectrum and integrated 256-bit AES encryption

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