



The Power of We™



Challenge

With its data center reaching capacity, Kutztown University needed to strategize for future growth to support state-of-the-art educational and administrative applications, with 24/7 uptime for students and faculty. Their goal was to develop a scalable, cost-efficient, energy and space-saving solution that could provide the required density and a clear pathway to network virtualization.

Solution

One Avaya VSP 9000 has already been installed for the residential network, and the University is strategizing toward an Avaya VSP 9000 installation for the administrative/academic network. (Please see the Systems and Applications chart on page 4 for additional details.)

Value Created

- **A fully scalable architecture** that provides immediate support for very **high-density** 1 and 10 Gigabit Ethernet, and future-readiness for 40 and 100 Gigabit Ethernet standards.
- **Investment protection:** infra-structure will accommodate future technological advances for many years to come.
- **Cost savings and operational efficiencies** are achieved through a simplified network infrastructure that speeds deployment of new systems and applications and allows for expansion without costly network re-engineering.

Server consolidation and virtualization can increase server utilization to 60-70% or more (current industry average being 10%) and provide energy and cooling savings of 50% or more.¹ Rack space requirements can be reduced by 30% or more.

- **High reliability, resiliency, and availability**—helping to ensure 24/7 uptime for day and night usage by students and faculty.

¹ Source: IDC, 2009

What's new on campus?

A next-generation data network places Kutztown University on the leading edge of educational technologies—now, and for many years to come

Kutztown, Pennsylvania – A quiet transformation is taking place in the cool, well-orchestrated data center on the Kutztown University campus.

With the installation of an Avaya Virtual Services Platform 9000 (Avaya VSP 9000), the IT team has launched the University on a journey into next-generation data networking. It's a journey that is expected to reduce overall operating expenses, ensure the highest levels of flexibility and reliability, and enable the latest advances in data, voice, and video technology for years to come.

Building on a legacy of success

Since 2001, Kutztown University has successfully developed its ResNet (residential) and administrative/academic data networks with two Avaya Ethernet Routing Switches 8600 at the core of each network. The infrastructure has successfully accommodated a 25% increase in student body size and the construction of several new buildings on campus.

However, demands on the network continue to grow. With over 10,000 students and approximately 1,000 full- and part-time employees working at all hours of the day and night, research and advanced scientific projects and applications requiring high bandwidth and throughput, and administrative processes constantly advancing, Kutztown University needs to be both proactive in its deployment of network technology and careful in its allocation of resources.

During the latest refresh cycle for the residential network, the University's IT team had an opportunity to carefully consider the current and future network needs of the University and to establish a strong foundation for future growth.

According to Kevin Schukraft, Manager of Network Technology, many factors defined Kutztown University's networking needs going forward. *"Our data center was at capacity, and instead of adding more and more hardware, we wanted to have a solution that would give us greater capacity without increasing energy usage.*

“We also wanted a network that could enable us to stay current with technology. For this we would require much greater density and throughput, with a clear pathway to network virtualization.

“Thirdly, our campus environment requires maximum uptime, because our students, faculty, and staff use the network round the clock, and that usage is stretched by the growth of online education and an increase in the number of non-traditional students who study with us. We knew that Avaya solutions offer high resiliency and reliability, and through virtualizing our two networks, we could take those capacities to the next level, with a live back-up for any type of failure on either side.”

Senior Network Engineer Josh Heller commented, *“There are many applications that already require enormous throughput, and the number of these are certainly going to expand in the future. For example, the science department often transfers massive amounts of data from various atmospheric*

“ Keeping our network always on and available for every user, with the throughput that is needed, is our first priority. Our data center strategy is now centered around the capabilities we will have with the Avaya VSP 9000. We believe it will be very effective in enabling us to support the university’s mission of educating students. ”

— Kevin Schukraft,
Manager of Network Technology

research institutions, and these are used to teach geological modeling. Applications such as these make IT work on a campus very exciting but at the same time very data-intensive and IT-critical.”

Phasing in a powerful solution to accommodate growth

Working closely with Avaya and an Avaya Connect channel partner, the Kutztown IT team examined a scenario that would involve enhancing their existing Avaya ERS 8600 infrastructure and another that would involve replacing the two ERS 8600 switches used for the residential network with the new Avaya VSP 9000.

“When we started comparing the options, it seemed that from the perspective of both finance and performance, we would gain by moving ahead with the Avaya VSP 9000,” Schukraft commented. *“We felt that this technology would continue to develop and that it will be the best way to pursue our plans for virtualization.”*

Today, the University’s data center is in production with the Avaya VSP 9000 for ResNet, while retaining the two Avaya ERS 8600s for the administrative network. (See Systems/Applications/ Services chart on page 4.) The university is strategizing toward installing a second VSP 9000 on the administrative network, replacing the 8600s currently in use there.

Why Avaya? Schukraft stated, *“Our Avaya equipment has performed very well for many years, and the reliability it gives us is extremely important. The Avaya team has a track record of providing excellent service in both the planning and execution of new*

installations. Their future roadmaps are very clear and progressive, so we can have confidence in where we are moving for the future. As we consider all of our options, Avaya is by far the best fit for us.”

Heller added, *“We also have to consider time of deployment, and the importance of having a good support team in place. Typically we operate on very, very short timeframes to do large-scale deployments. The relationships we have with Avaya and our Avaya channel partner make a big difference in a successful deployment.”* According to Heller, moving into production with the Avaya VSP 9000 was done on an extremely accelerated timeframe in order to be ready for the return of Kutztown University students for the fall semester 2010.

“Instead of being in a user-vendor relationship, I think we function more as a partnership,” Schukraft said. *“Avaya and our Avaya channel partner have accommodated us very quickly and really taken care of us as a customer. Being a partnership helps. No matter what the issue may be, they take care of it with no questions asked.”*

Future-proofing the campus networks with an advanced Avaya platform that is always-on, efficient, and scalable

By moving to the Avaya VSP 9000 platform, Kutztown University has taken an important step to future-proofing their networks. The platform delivers a wide range of benefits, including:

- **High-density, fully scalable architecture.**

The Avaya VSP 9000 provides immediate support for very high-density 1 and 10 Gigabit Ethernet, and future-readiness for the emerging 40 and 100 Gigabit Ethernet standards. The fully scalable architecture can scale seamlessly in line with performance requirements, without complex or expensive re-engineering.

Schukraft commented, *“10-Gig will set us up to accommodate needs in the academic arena, where applications are starting to drive more demand for high-speed performance. Currently, some of the greatest needs for enhanced performance and throughput come from our business college, the computer science program, and our research programs where there is heavy exchange of data. We anticipate that these needs will continue to increase, and that we will also need to accommodate new high-performance applications in the administrative area as well.”*

Schukraft mentioned that the University is also acutely aware of the students' residential needs. *“This is their home for many months of the year, and they expect to get the same service or better than they would get at home. Enabling their work and satisfying their needs is a top priority. We realize that the students today are brought up with the technology, and they're more advanced than a lot of people because they're exposed to the technology at such a young age. Everything they do is based around technology. This new Avaya network will help us keep pace with their technology expectations.”*

- **Cost savings, investment protection, and green benefits.**

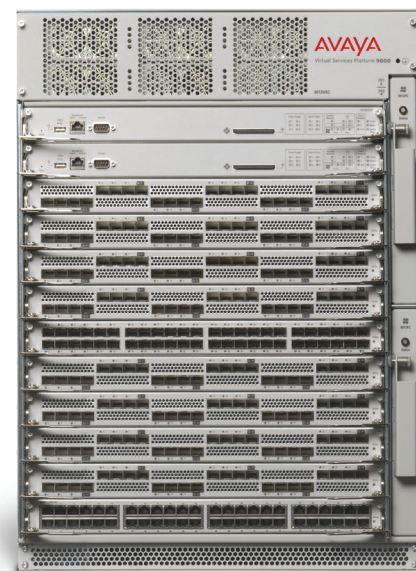
A less complex, more agile virtual network infrastructure simplifies the network and helps reduce the cost of deploying new services. Upgrades to meet evolving network and application requirements can be done efficiently, reducing operating expenses and protecting network investments.

The Avaya VSP 9000 equipment runs on either 110 or 220 volts. Kutztown University plans to convert to using 220 volts to provide higher performance without increasing energy usage. The overall footprint is reduced, with about 30% less rack space required to house the equipment. (Note: as indicated below, power consumption and cooling needs can be reduced, with industry estimates showing possible reductions of 50% or more when multi-servers are consolidated and virtualized.)

- **Reliability/Resiliency/Availability.**

The Avaya VSP 9000 platform provides density of the high-speed ports, which the IT team has identified as the main driving factor in where they need to go. They plan to have 4 virtual routers on two Avaya VSP 9000s, to achieve the levels of performance and reliability that are critical to their future growth.

The Avaya VSP 9000 was designed and developed on the basis of leading-edge hardware resiliency with numerous mechanisms in place to ensure system availability. It can provide unmatched resiliency for Kutztown University because it is powered by Avaya's unique switch clustering capability, which uses both split multi-link trunking and routed split multi-link trunking technology. The high-availability mode engages all links when forwarding traffic. Instantaneous all-port



Avaya Virtual Services Platform 9000

re-routing results in the elimination of packet loss, which is an important feature when many students and faculty are using next-generation applications. Redundant and hot-swappable control processor and switch fabric modules, plus redundant cooling fans and power supplies, contribute to reliability of the Kutztown University network. As the University continues on its path to virtualization, the IT team can expect to experience further enhanced performance features, to the point where utilization rates can run to 60-70% or more (a typical current utilization rate in the IT industry is roughly 10%). Management benefits can be expected to include application provisioning, streamlined maintenance, high-availability, disaster recovery, and the ability to run multiple operating systems. Power consumption and cooling needs can be reduced, with industry estimates showing possible reductions of 50% or more when multi-servers are consolidated and virtualized.¹

¹ Source: IDC, 2009

- **Enabling future advances in IP telephony.** The university currently utilizes Avaya Communication Server 1000 (Avaya CS1000) with Contact Center Manager to support agents at the various help desks for the IT department, the registrar's office, the financial aid office, the admissions office, the bursar's office, and the health and wellness center. The University is also phasing in Avaya CallPilot™, which provides voice/fax messaging and integrated unified messaging capabilities through the user's familiar desktop e-mail environment, plus Web-based unified messaging and personal mailbox management through My CallPilot.

"We've had very positive results with the Avaya telephony products, and we plan to continue to develop their potential," Schukraft mentioned. "We've seen the roadmap demonstrating how these systems will be supported by the new Avaya VSP 9000 solution. It appears that we will have many opportunities to enhance the services that we offer for staff, students, parents, and even grandparents who rely heavily on the phones for information and services."

Schukraft concluded, *"Keeping our network always on and available for every user, with the throughput that is needed, is our first priority. Our data center strategy is now centered around the capabilities we will have with the Avaya VSP 9000. We believe it will be very effective in enabling our vision of supporting the university mission of educating students."*

Learn More

For more information on how Avaya Intelligent Communications can take your enterprise from where it is to where it needs to be, contact your Avaya Account Manager or a member of the Avaya Connect channel partner program, or access other collaterals by clicking on **Resource Library** at www.avaya.com.

All statements in this case study were made by Kevin Schukraft, Manager of Network Technology; and Josh Heller, Senior Network Engineer.

SYSTEMS AND APPLICATIONS

Data Center

- Avaya Virtual Services Platform 9000
- Avaya Ethernet Routing Switch 5650-48T
- Avaya Ethernet Routing Switch 8600
- Avaya VPN 2600
- Avaya VPN 3050
- Avaya Ethernet Routing Switch 5510-48T

Telephone Room

- Avaya Communication Server 1000e
- Avaya Contact Center Manager
- Avaya CallPilot™
- Avaya Fiber Remote Shelves

Telecommunication Rooms:

ResNet (student residential) Network

- Avaya Ethernet Routing Switch 470-48T
- Avaya Ethernet Routing Switch BPS-2000
- Avaya Ethernet Routing Switch 5510-48T
- Avaya Ethernet Routing Switch 5520-48T
- Avaya Ethernet Routing Switch 2550T-PWR
- Avaya Ethernet Routing Switch 5698TFD-PWR

Administrative/Academic Network

- Avaya Ethernet Routing Switch 470-48T
- Avaya Ethernet Routing Switch BPS-2000
- Avaya Ethernet Routing Switch 5510-48T
- Avaya Ethernet Routing Switch 5520-48T
- Avaya Ethernet Routing Switch 470-24T
- Avaya Ethernet Routing Switch 5698TFD-PWR

ABOUT KUTZTOWN UNIVERSITY

Comprising four colleges - Business, Education, Liberal Arts and Sciences, and Visual and Performing Arts - Kutztown University offers a diverse range of excellent academic programs to prepare individuals for successful careers. Currently, 10,700 students are enrolled at the university from 26 states and 51 nations. There are 330 full-time faculty members—a favorable 20:1 student-faculty ratio. The University is accredited by the Middle States Association of Colleges and Secondary Schools (MSACS), and professionally by the National Council of Teacher Education and National League of Nursing. The Kutztown University of Pennsylvania is a member of the State System of Higher Education. For more information, please visit www.kutztown.edu.

ABOUT AVAYA

Avaya is a global provider of business collaboration and communications solutions, providing unified communications, contact centers, data solutions and related services to companies of all sizes around the world. For more information please visit www.avaya.com.