

Challenge

- Build a university-wide communications system over an IP voice, data, and video backbone to connect campuses, eliminate busy signals, and offer features such as voicemail for students and teachers.
- Reduce expensive phone service and Internet access bills.
- Enable distance learning, video and audio teleconferencing, and revenue-generating communications services.
- Deploy wireless Internet access and other technology-related services at the Top Green Community Center in downtown Raleigh in time for a grand re-opening ceremony in March 2007.
- Expand its existing distance learning program by making college courses available at multiple sites on campus and to the local community with a converged solution offering the latest video and voice technology.
- Improve communications between the main campus and the Community Center by installing IP telephones with simple and user-friendly graphical displays for easy access to campus departments.
- Enhance videoconferencing capabilities to more locations around the campus.

Solution

By spearheading a cutting-edge IP network, Shaw has created an integrated campus communications system that improves its educational offerings, supports students and instructors, and reduces costs while creating new ways for the University to generate revenue.

Value Created

- The University's phone, Internet and data bills have dropped by 50 percent per month (after two months the charges were zero).
- Total savings greater than \$300,000 per year in communications costs.
- Enrollment for remote campus locations has increased by 20 percent.
- Overall projected savings of \$1.5 million over five years.
- A robust, integrated communications network can help universities stay focused on serving students and on what matters most for a university: recruitment, retention, degree completion, and alumni participation.
- Wireless Internet access is now available at the Top Green Community Center in downtown Raleigh, allowing members of the community who don't have Internet access at home to do research, send and receive emails, and enjoy other appropriate Internet-related activities.
- High quality videoconferencing has been established between the Community Center and the University's campus.
- An IP telephony connection has been established between the Community Center and the University's public relations department allowing community residents to place calls for technology-related support and troubleshooting. Additional departments on campus will be available to the public via the IP connection in the months ahead.
- Three mobile videoconferencing units are now deployed on campus, allowing courses to be videoconferenced from one location to another with ease and with high quality voice/video reception.
- Distance learning through the Avaya Converged Voice network has supported 10 remote site locations with an average of 15 classes over the past year.
- Voice, video and data services have been provided to the local community over an outdoor wireless link.

Closing the Digital Divide

Shaw University teamed up with Avaya to connect its main campus to remote sites through a cost-effective IP network, and provide wireless Internet access to the local community.

RALEIGH, North Carolina USA – Founded in 1865, Shaw University is the oldest historically black college in the South and has spawned five universities throughout the region. As times have changed, so has Shaw. With 2,600 students today, Shaw reaches students and communities in the farthest corners of the state through a converged IP network deployed by Avaya.

Shaw Wanted To Expand Its Reach — digitally

In addition to its main campus in Raleigh, Shaw operates nine satellite campuses known as CAPE Centers (College for Adult and Professional Education). Shaw also sends instructors to other remote locations such as state prisons, offering inmates a chance to earn degrees. A liberal arts college that opens its doors to all students regardless of race, creed, or religion; the University also keeps pace with the economy, providing advanced business and computer science programs.

To maintain its mission of breaking down educational barriers, Shaw decided in 2003 that it was time to trail-blaze once again — this time by reinventing the University's communications system.

"The key was creating a seamless campus," said Martel Perry, executive vice president, Shaw University. *"I didn't want to just do voice over IP (VoIP). I wanted all communications resources to be distributed from the main campus. For example, remote students can ride the network to our hub in Raleigh, which creates a higher level of security."*

Campus Communication System Was Overloaded

Reasons had been mounting for some time for Shaw to revamp its communications system. Shaw had no single telephone system on campus — there were 13 different

phone systems — and the University was getting services from eight local telephone carriers, four long-distance carriers, and 43 different data and Internet service companies. The system was not only confusing to manage, but it was expensive. The University's telecommunications costs were close to \$40,000 per month, regardless of call volume.

Even worse, calls to the admissions or financial aid offices were frequently met by busy signals, which crippled productivity and lowered student satisfaction. In addition, the administration, faculty, and dormitory phones did not have voicemail capabilities. *"When 80 to 90 percent of your students are receiving financial aid, you have to create an environment in which students can reach the right people to get assistance,"* Perry said. *"Most students gauge the quality of service not by how much time you've spent on the phone with them, but whether they've reached a live person when calling."*

At the time, the CAPE Centers also were not fully integrated from a communications standpoint. For instance, students had to dial long distance from the Center in Ahsokie to the main campus in Raleigh (99 miles away). CAPE Centers had separate Internet providers and when computers needed to be upgraded, students and faculty had to wait days or weeks for a technician to arrive. When it came to distance learning, the possibilities for CAPE Centers were endless, but Shaw was not positioned to maximize those opportunities. Shaw wanted to take advantage of tools like videoconferencing to truly connect CAPE Centers with the main campus, create a more enriching classroom experience, and

expose students to top instructors, no matter where they were located.

"We needed to connect the campuses — without physically building out our entire communications infrastructure," Perry said. *"At the same time, we wanted a single, turn-key vendor solution."* Avaya made the grade. An experienced network architect himself, Perry chose Avaya because it could best fulfill his vision for a state-of-the-art communications network that would not only bolster the University's effectiveness but save — and actually earn — Shaw money.

An IP Network Makes the Connection for Shaw

For most universities, funds have to be doled out wisely. Shaw did not want to deploy a hardware-based telecommunications system that would have to be frequently upgraded, that would lock the University into using a specific vendor, or was not flexible enough to respond to changing student and faculty needs. Shaw selected Avaya to redesign and enhance its network because the Avaya MultiVantage™ Communication Applications suite with their Carrier Services expertise could help define and address the entire Shaw communications strategy. *"I was also investing in Avaya based on its reputation for reliability, customer service, and migration practices,"* Perry said.

What started as an effort to upgrade students' phones in the dormitories ended with Shaw and Avaya creating a multi-phase plan that would provide the University with a fully converged network.

In June 2003, Avaya kicked off the first phase of the IP network rollout deploying Avaya Communication Manager software running on Avaya Servers and an Avaya Extended Port Network (EPN) to support 2,400 analog and digital phones in the Shaw dorms. The new system included voicemail, intra-network transfer capabilities, and caller ID. The setup was complete by August 15 — just in time for the new school year. Phase one also included implementing Avaya Extension to Cellular (formerly EC500), which bridges telecommuting professors' cell phones with their office number so they can be available to students and staff while on the go.

During the second phase of the project, Avaya implemented Unified Messenger voice messaging solution and tackled their phone, Internet and data services. Avaya Carrier Services developed a seamlessly integrated network robust enough to handle VoIP, data and videoconferencing via frame relay in addition to interconnecting the nine satellite campuses. The Carrier Services team also replaced the University's old Centrex system with 19 new T-1s. The Centrex system was costing more than \$50,000 per month in student and staff communications, not to mention the traffic was causing busy signals and poor response. Over a 12 month period, the T-1 PRI solution reduced its monthly expense by \$40,000 and improved the services by eliminating busy signals and enabled four-digit dialing, conference calls and e-learning video classes. Avaya deployed 350 new IP Telephone endpoints (Avaya Models 4624, 4620 and 4621) for the main campus offices by October, and installed T1 lines at the CAPE Centers.

For the third phase, Avaya installed the wide area network (WAN). Avaya also kick-started the videoconferencing network by setting up Polycom units (e.g. ViewstationEX at CAPE's, Polycom VS4000 and MGC-50 audio video bridge on main campus, video units capable of H.320 and H.323 video calls). By March 2004, all phases were complete including the implementation of the video network, which now connects the CAPE Centers and main campus for meetings and distance-learning courses.

Avaya Global Services was involved in all three phases of the project. Global Services coordinated installations, tested the network for stress, monitored the network, and made modifications to sharpen voice and data transmission quality. Today, the Shaw communications system supports more than 2,700 users, and that number is anticipated to double in three years.

Distance Learning Has Fewer Gaps

In keeping with its goal to offer higher education to under-served populations, Shaw's communications network can support more than double the number of students that it could before—about 4,900. Most new students will come through the CAPE Centers, Perry said. *"This is huge for us because the student population in rural areas of the state normally wouldn't have the opportunity to go to a four-year school. They would have to leave the area."*

Among the improvements, CAPE students can now dial a four-digit extension and more easily reach anyone within the Shaw network statewide, as though they were calling from

the main campus. The distance-learning experience is also improving educational opportunities across the state. *"The level of learning can be more equal,"* Perry said. *"Now, if I have the No. 1 physics teacher in North Carolina on my faculty, I can dynamically share that teacher with all of my campuses."*

Not only can students across the state use videoconferencing to take advantage of the free tutoring offered by Shaw, they can participate in a course from any Center as if they were in the same room as an instructor. For example, students can take remote computer science courses and follow the instructor's programming steps while online, and the instructor can review their work in real time. Students can ask questions through audio conferencing or by sending an email to the instructor's assistant if the lecture is still in progress.

Shaw has also deployed three mobile video units and ports around the campus that can handle video, audio and data. The mobile units can be wheeled into any classroom on campus and used to videoconference the course to any other room on campus or to any CAPE. The data transmission and the audio/video traffic are run over a fully converged network provided by Cisco (data) and Avaya (audio/video).

Data services are more reliable at CAPE Centers, too. *"The network is always up and running,"* Perry said, and now Shaw no longer has to dispatch technicians throughout the state to upgrade and test software. System monitoring and maintenance can be done remotely utilizing the tools in the Avaya Integrated Management software suite.

"According to initial feedback from the CAPE Center directors, emails we've received, and our trustees, enrollment for CAPE Centers for the fall has already increased by 20 percent," Perry said. *"We believe people are valuing the fact that we are building a connected virtual campus. Remote students now can feel that they are a part of the central campus — which helps us better show the value of the CAPE Centers."*

Re-Opening of Community Center Provides Another Opportunity to Give Back

In the spring of 2007, Shaw wanted to build on its commitment to supporting the local community by working with a collaborative group of technology vendors to deploy wireless Internet access and other technology-related services at the Top Green Community Center in downtown Raleigh. The goal was to make this happen in time for the grand re-opening of the Center in March 2007. The University was also looking to expand its Distance Learning program by making even more college courses available to the local community at various locations on and off campus with a converged solution offering the latest video and voice technology.

"The re-opening of the Community Center presented a great opportunity for Shaw to give back to the community by providing state-of-the-art technology at a central location in downtown Raleigh," said Hooshang Foroudastan, chief information officer, Shaw University. *"Providing free wireless Internet access points at the Community Center allows citizens who may*

not have a computer at home to do research online, send and receive emails with photos and any other activity on the Internet.”

Avaya worked with representatives from Shaw and other vendors, including IT equipment leasing and supply company Relational Technology Solutions (RTS), to plan, configure and deploy the wireless Internet network, and upgrade the computers at the Community Center with new equipment, the latest software and anti-virus protection. The Computer Science Department at Shaw has also enlisted student volunteers to visit the Center to help members of the community with basic computer skills such as composing and sending emails, attaching photos to emails, and connecting to the Internet.

Avaya and RTS have also collaborated on an Application Gateway that will have the ability to push relevant Web/graphic content to Avaya IP phones at the Center, so that a user can easily press a graphic and get connected to an official at the University that would be responsible for that particular outreach program.

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 Client Executive or a member of the Avaya Authorized BusinessPartner program, or visit **“Do Your Research”** at www.avaya.com.

APPLICATIONS

- Avaya MultiVantage™ Communications Applications
- Avaya Communication Manager
- Avaya Unified Messenger
- Avaya Extension to Cellular (EC500)
- Avaya VPNmanager® Series
- Avaya Integrated Management — Standard Management Solutions
- Avaya MultiService Network Manager

SYSTEMS

- Avaya S8700 Server
- Avaya G700 Media Gateway
- Avaya S8300 Server
- Avaya Extended Port Network
- Avaya P330 Stackable Switch System
- Avaya 4625 Series Telephones
- Polycom Multipoint Group Conferencing

SERVICES

- Avaya Global Services IP Telephony consulting and Integration
- Carrier Services: 19 T-1 PRIs, Integrated Voice, Video, and Data Network via Frame Relay

ABOUT SHAW UNIVERSITY

The primary mission of the University is teaching with the commitment to maintain excellence in research and academic programs that foster intellectual enhancement and technological skills.

Additionally, the University stresses character development, which includes religious, cultural, social, and ethical values. Ultimately, Shaw University endeavors to graduate students with demonstrated competencies in their chosen fields of study. For more information, visit www.shawuniversity.edu.

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Avaya is a global leader in enterprise communications systems. The company provides unified communications, contact centers, and related services directly and through its channel partners to leading businesses and organizations around the world. Enterprises of all sizes depend on Avaya for state-of-the-art communications that improve efficiency, collaboration, customer service and competitiveness.

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