SOLUTIONZ

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INTEGRATING TOP AUDIO-VISUAL TECHNOLOGY FOR UPENN SCHOOL OF NURSING

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SOLUTIONZ INC.

Solutionz Inc. has been providing state of the art audio visual and communication solutions to small and large businesses, government entities, major corporations, educational and healthcare institutions for more than 20 years.

Established as a forward- thinking company dedicated to staying on top of the latest technology advancements, our company credits its innovation and growth mindset for its ability to deliver high-quality systems design and support services nationwide. Whether clients need video conferencing capabilities, integrated presentation networks, or interactive collaboration tools to connect remote team members in an instant, Solutionz provides reliable and effective communication and collaboration solutions and strives to be the ideal audiovisual partner.

THE CLIENT: UPENN SCHOOL OF NURSING

The University of Pennsylvania's School of Nursing is ranked the best school for nursing in the world four years in a row by QS World University Rankings. One of the largest educators of pre-licensure students in Pennsylvania, The University of Pennsylvania is educating the next generation of nurses and nursing scientists.

Claire M. Fagin Hall, home to the School of Nursing, has medical-simulation technology that gives students an incredibly realistic patient experience. With state-of-the-art equipment and highly accredited staff, students are offered world class learning experiences.

THE UNIVERSITY OF PENNSYLVANIA'S SCHOOL OF NURSING PARTNERS WITH SOLUTIONZ INC.

With systems that were over 10 years old, The University of Pennsylvania's Nursing School understood that teaching technologies were becoming outmoded and began to develop the plan for their new era of technology.

Having worked with Solutionz in 2012 to create Fagin Hall's current system, the Solutionz team was a natural choice to build an upgraded integrated network and student learning systems that would provide unequaled healthcare education well into the future.

The plan became a complete overhaul in medical-simulation equipment including technical systems to record student/patient interactions, facilitate communications among staff observers and display lecture content.

Solutionz had set high expectations for superior performance in the initial project and was ready to demonstrate continued expertise.

THE CHALLENGE

The project's extensive layout includes 27 student observation bays, divided into three classrooms, all simulating healthcare facilities, four high-definition observation rooms and a homecare suite.

The previous healthcare-simulation systems were analog audio and video links between the head end and student spaces housed in various full-height equipment racks. The university wanted to significantly reduce the technology footprint and reclaim space to be converted into a staff office so the plan for HDBaseT topology evolved into an IP-based systems, allowing for these equipment racks to be demolished.

Most often, large IP-based systems are loaded onto separate AV-dedicated networks installed by the integrator. The University wanted to leverage their existing Juniper networks, creating a challenge by dramatically increasing traffic on the same network used by students and faculty for internet access and email service. Additionally, documenting the switches on the network for the internal IT team to manage was vitally important; this process ensures that security patches, preventative maintenance and software updates are done regularly, keeping the network operational and secure.



THE SOLUTION

Working closely with the School of Nursing's IT staff, Solutionz was able to leverage the building's current Juniper-based network for all AV traffic. Using two VLANS, one for Dante and NVX and the other for cameras and controls, over 300 ports were added, via additional switches, to accommodate the large number of components.

The new IP-based solution features QSC and Shure audio-over-IP devices using Dante, B-Line Systems video-capture encoders, Axis Communications IP pan-tilt-zoom (PTZ) cameras and Crestron NVX video-over-IP system.

Each observation bay has a 48" Sharp NEC LED display that is connected by the Crestron NVX AVoIP platform, the new integration's networked signal transport and control. A B-line software-based recorder archives lessons and demonstrations for students to access later.

A total of 140 microphones are used throughout the teaching facility. Two microphones per bay, an Audix M40W6S suspended overhead and an Audix GS1W at the front of the display, ensure that sound is picked up regardless of the direction the speaker is standing. Additionally, instructors have the option to wear Shure MXW wireless mics that allow participants, via a return channel, to plug into headphone jacks and hear input from the control room located between the main teaching bays utilizing the Dante network. A 10-inch Crestron master panel allows selection of individual instruction stations.

JBL 6.5" speakers are used for public-address purposes. SoundTube high-directivity speakers are installed in some of the bays and other bays have Dakota Audio FA-602 narrow-dispersion speaker, repurposed from the original design. Able to be open and closed from the control room, this speaker configuration allows participants inside the bay to hear without the sound spilling out to other areas.

96 Axis Communications M5525-E IP cameras are distributed via H.264 streams throughout the teaching bays. Two cameras per bay includes one mounted on the ceiling for an overhead view and one on the wall for close-up views. Signals sent to the B-Line encoders enable real-time viewing on the control rooms' Crestron panel as well as recording for future use.

The new IP-based solution not only saves money and space by utilizing pre-existing IT assets, but also allows educators and observers to be located outside of Fagin Hall, making the system dynamic for hybrid learning well into the future.

PUTTING IT ALL TOGETHER

A Solutionz Senior Field Engineer who was part of the team installing the original nursing training system ten years ago, said, "the difference between then and now is night and day. Then, it was analog inputs and outputs and quite a lot of cabling. Now, far less wiring on the network. It's much more efficient."

Here is a short list of the main components used:

- Audix Integrated Microphones
- Axis Communication cameras
- Crestron Control Systems
- Dante Network Interfaces

- Dante Core Processors
- Sharp NEC Displays
- Shure Network Charging Stations
- SoundTube Speakers



LOOKING TO THE FUTURE

This incredible project exemplifies the IP shift that AV integration has made.

The Solutionz Field Engineer continues, "The last time we did this for the school it was all analog... This time, all the audio and video traveled through their networks, requiring little to no field cables. The only analog cables needed were 35 analog in and 35 analog out to the B-Line endpoints.

We've seen the future, and it is working.

Solutionz Senior Field Engineer

The amount of space that [was] freed up by using a network was enormous. The space that had been used for full-height AV racks has now been turned into an office -the racks replaced elsewhere with a small AV closet. This futureproof[s] the entire campus, but it is also the future. The next time we do a project like this, this is the one I'll look back on as reference for it. We've seen the future, and it is working."



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