



Extron NAV Series Delivers AVoIP Throughout UNCW's Newest and Largest Campus Addition

“Tying the cameras and mics to each room’s local system and the DE control room has proven to be a major benefit in this age of Covid. We use the NAV AVoIP system to route lessons anywhere, as well as capture each session, which satisfies all of our social distancing needs and has huge positive implications for the future.”

Robb Mann, CTS-I
Manager, Integrated Educational Technologies, ITS
University of North Carolina Wilmington

Challenges

The University of North Carolina Wilmington – UNCW is an R2 Doctoral University recognized for high research activity. In response to demand for more classrooms and lab space, they made plans to build the new 145,000 square-foot Allied Health Veterans Hall, which is nearly twice the size of any other instructional facility on campus. The building would include the first UNCW instructional spaces designed from the ground up as active learning classrooms, as well as state-of-the-art labs for studies such as anatomy and kinesiology. In addition to classrooms, lecture halls, and labs, the building would provide conference and meeting rooms, huddle spaces, and problem-based learning rooms to enhance communication and collaboration among students and faculty. To ensure students had every opportunity to reach their full potential, each room required its own flexible AV system that was easy to operate. Additionally, the AV systems had to tie into the Distance Education control room for centralized management and lesson recording capabilities.

UNCW had specific goals for the quantity, quality, and functionality of the AV technology in the massive new building, but they also needed to stay within a defined budget. In addition, they wanted a future-ready solution that would be viable for many years to come.



Active learning classrooms have a flexible setup and can be reconfigured to address semester-based pedagogical needs. An Extron NAV E 101 is installed with the PTZ camera over the suspended exam table to send images to the Distance Education Control Room over the UNCW network. This classroom is shown in the traditional configuration, which is better for social distancing.



Rack-mounted within the instructor lectern located in each active learning and traditional classroom is the AV system. It includes NAV E 101 encoders and NAV SD 101 scaling decoders. Additional scaling decoders are mounted to the two projector lifts.



Within the Anamatage Lab, each table is capable of displaying horizontal slices of the human body to reveal bone structure, nerves, muscle, and veins without having to physically dissect a body. The NAV system enables content to be captured and distributed to remote locations over the university network.

UNCW turned to consultant Affiliated Engineers, Inc. – AEI Eng to design the comprehensive installation and KONTEK Systems, Inc. for whole-building integration. While the facility includes an extensive array of Extron products such as DTP® systems, Flat Field® speakers, and Pro Series control systems, this story focuses on the Extron NAV® Pro AV over IP systems that enables AV signal distribution throughout the building.

Solution

The building includes 16 spacious lecture and lab instructional rooms, five active learning classrooms, 29 collaboration and conference spaces, and over 30 digital signage destinations. The installation incorporates multiple AV switching systems, which include PTZ cameras, ceiling mics over student areas, multiple large screen displays, and more. Classrooms, conference rooms, and collaboration spaces have wireless connectivity to the displays for room arrangement flexibility and ease of use. Wherever possible, AV components are installed behind the displays for a clean look and to avoid the use of AV carts.

After looking at other AV technologies, UNCW identified several reasons why the Extron NAV Pro AV over IP system was the ideal solution. NAV is deployed in a variety of spaces that feature videowalls and multiple flat panel displays and it also ties all rooms back to the Distance Education control room. Testing proved that NAV was stable, robust, and delivered a visually lossless signal. The system was easy for the support staff to administer from the DE control room, and all control system programming could be performed in house. Also, NAV provided the capability to control or limit bandwidth, if necessary.

KONTEK installed the pilot AVoIP active learning classroom a year before the building was slated for commissioning. This space served as “proof of concept” and allowed various equipment to be evaluated in a real-world scenario. The installation included eight network endpoints that linked back to the DE control room. When the design was approved, the NAV system was scaled up to tie in 200 endpoints located throughout the building. It was also used to develop the gold configuration for the network servers. The pilot room then served as the training space for professors to develop their content and skills in the new active learning environment.

To begin instruction, the professor launches their own Zoom® session and runs the class while a control room operator captures content for streaming and archive. Operators are able to monitor all ongoing classes and labs and correct any issues when or even prior to the professor knowing there is a problem. Two of the many remote operation capabilities facilitated over the NAV system are audio mixing and control of the PTZ cameras.

Extron NAV E 101 1G encoders and NAV SD 101 1G scaling decoders were deployed for each room and system with 10G uplinks to central aggregate Cisco® Catalyst 9300 Series switches. These NAV 1G models



A credenza in the larger meeting rooms and the conference room for the Dean of the College of Health and Human Services houses the AV system, including the NAV SD 101 scaling decoder that links all spaces and provides access to the electronic archives.



Each camera and microphone throughout the building ties back via NAV to the operator stations within the DE control room. This enables remote monitoring, audio mixing, and control.



The use of the NAV Pro AVoIP system cut the rack load from three full racks to half of a single rack. In addition to space savings, this greatly reduced the heat load within the DE control room.

are compatible with 10G endpoints, eliminating the need for additional devices. The system takes full advantage of the efficiency of the Protocol Independent Multicast, or PIM, sparse mode, facilitating overflow between spaces.

Two NAVigator Pro AV over IP System Manager devices work together to control the entire NAV system which encompasses 200 endpoints. They provide easy configuration, monitoring, and control of the encoders and decoders from the DE control room. NAVigator uses the SSH – Secure Shell protocol to encrypt communication between it and each endpoint. The installation stays within UNCW's standard practices of having control devices on a separate network, with IPv4 routing to the NAV network for control.

In the Distance Education control room, the NAV components provided an unexpected benefit of substantial space savings. The engineered finesse of NAV technology and the compact size of its components allowed the number of AV racks to be reduced from the planned three, fully loaded racks down to a single, partially filled rack.

In accordance with COVID-19 health and safety guidelines, KONTEK was unable to go on site for system commissioning. To ensure that each space was ready for distance learning in time for the fall semester, KONTEK and an Extron engineer worked in conjunction to remotely commission UNCW's state-of-the-art Allied Health Veterans Hall installation.

Results

UNCW is quite pleased with system flexibility and stability. KONTEK efficiently integrated AEI Eng's design, facilitating high-performance AV switching and distribution over the university network at extremely low latency. The Extron NAV Pro AVoIP system has proven invaluable for distance learning while they wait for a full return to on-campus life. The installation successfully delivers real-time video at resolutions up to 4K/60 with 4:4:4 chroma sampling to the complete satisfaction of the professors, staff, and administration.

UNCW also appreciated that NAV is an economical choice. The project's original AV budget estimate was not fully funded, which left the university with a shortfall. Not only did integration of the Extron NAV Pro AVoIP solution meet all system requirements, but it also realized an approximate 18% cost savings. This enabled UNCW to immediately install 17 of the 18 items on their wish list for further system enhancements.

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