



Coastline Refreshes Campus AV with Extron Digital Switching, Streaming, and Pro Series Control

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Ken Peterson, CTS
Senior AV Solutions Architect at GST

The Coast Community College District in California is known as one of the nation's most innovative institutions of higher learning. At their Garden Grove, Newport Beach, and Westminster campuses, they provide instruction for academic degrees as well as career, veterans, technical education, and basic skills coursework. Their advanced online and distance learning programs have also garnered the respect of colleges around the world.

The Garden Grove campus of Coastline Community College offers the most technologically advanced facilities in the district. Recent upgrades to the campus AV systems have helped the district maintain its reputation for excellence. Over a nine-month period, Golden Star Technology, Inc. – GST installed Extron MPS 602 SA media presentation switchers in 50 classrooms and refreshed the lecture halls and a new videoconferencing suite with XTP Systems®, the SMP 351 H.264 Streaming Media Processor, and Pro Series control systems.

“We pride ourselves on pushing the envelope with technology,” says Chris Blackmore, Director of Academic and User Support at Coastline College. “Upgrading the AV systems with Extron equipment gives us cutting edge audiovisual, and helps to maintain our status as a highly successful college.”

GST worked closely with the college to identify what AV capabilities were required in the various rooms. The consensus was for consistency from location to location, operational flexibility, and compatibility with mobile devices. The goal was to be able to walk into any room, connect a laptop, and begin class with a minimum of effort. An easy way to select camera angles and record sessions



Extron Electronics
INTERFACING, SWITCHING AND CONTROL



An Extron XTP CrossPoint 3200 modular matrix switcher in the control room provides AV and control signal switching and distribution within and between the Commander M. Neel Buell Lecture Hall, a second lecture hall, and Videoconferencing Suite 207.

was also mandatory. “The college wanted commonality of use as well as the versatility made possible with the latest technologies,” says Ken Peterson, CTS and Senior AV Solutions Architect at GST. “We were able to deliver flexible, user-friendly AV systems across campus using solutions from Extron.”

Classroom AV with Compact Yet Powerful MPS 602

Each classroom AV system offers a resident computer, Apple® TV, and AV connectivity through an Extron SMB Series five-gang surface mount box. The display system consists of an Epson® interactive projector and a wall-mounted white board. The sound system provides sound reinforcement and supports a wireless microphone.

The design uses the Extron MPS 602 SA media presentation switcher. This model was selected for its versatility, supporting both digital and analog sources and extending signals long distances over twisted pair cable. The four HDCP-compliant HDMI inputs support in-room sources. Of the unit's two VGA inputs and five stereo audio inputs, one video input and one audio input enable connection of portable devices with analog outputs only such as an older laptop. The wireless microphone system connects directly to the unit's Mic/Line input, further reducing installation time and equipment needs. The presentation switcher's selectable HDMI/DTP output is set to DTP, sending the digital video signal over twisted pair cable to a twisted pair receiver. In this way, the Extron DTP HDMI 4K receiver with the projector receives video and control signals directly from the MPS 602 SA. Since AV and control signals are sent over the same shielded CATx cable, this simplified wiring in each room. The 1U enclosure fit easily into the lectern. “The variety of connections and built-in features of the MPS 602 SA matched the classroom requirements perfectly,” says Peterson.

The presentation switcher's built-in audio amplifier drives two Extron FF 120T speakers mounted in the drop ceiling. GST chose the plenum-rated speaker for its low-profile enclosure and capability to provide a consistent sound level across the listening area. The Flat Field® technology incorporated in this speaker ultimately helped in reducing the number of speakers needed per room.

For AV system control, an Extron MLC 226 IP AAP MediaLink® Controller is used to operate both the switcher and projector. The RS-232 pass-through port on the presentation switcher's output enables bidirectional communication to the display without requiring additional cable. Using the AAP version of the controller supports adapter plates offering AV connectivity and power within four single-space openings. The instructors appreciate the simple-to-use buttons and volume knob. The support team really appreciates the timer that shuts off the projector when the room is not in use, as it significantly reduces the number of lamp replacements in a calendar year. The IP Link network technology built into each MediaLink controller allows the classrooms to be linked to the campus network for remote system monitoring and AV system control when Coastline is ready to take this next step.

XTP Systems for Lecture AV Flexibility

Coastline College features two lecture/lab rooms, a videoconferencing area, and two lecture halls, one that seats 80 and the new Commander M. Neel Buell Lecture Hall, which seats 125. Extron XTP CrossPoint 3200 modular matrix switchers support these spaces, enabling each AV system to be customized to the college's requirements. Frames are populated with a combination of XTP CP Twisted Pair along with HDMI input and output boards for signal extension to and from

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XTP® endpoints and local signal distribution. Three XTP CP 4i HDMI input boards support the rack-mounted sources. Wireless devices are tied into the matrix switcher through the Apple TV HDMI connection. For the remote sources and display devices, XTP CP 4i twisted pair input and output boards enable signal distribution. XTP CP 4o HDMI output boards distribute signals to the rack-mounted resources, such as the audio and streaming systems, as well as route signals to the various control room displays.

The wide variety of input sources required a comprehensive EDID strategy. Through the XTP System Configuration Software, EDID Minder® enabled the integrator to easily configure EDID across the system for effective EDID management. The XTP CrossPoint® matrix switcher's capability to power the remote XTP endpoints over the same CATx cable used for AV and control signals also reduced equipment needs and installation time. All parties were pleased with the XTP systems' delivery of high performance signal extension in all configurations, while remaining transparent to the end users.

"Although this was my first time working with the line, it was easy to set up with the XTP Configurator software," says Peterson. "As soon as the XTP CrossPoint matrix switchers were in, they just flat-out worked."

Lecture Halls and Videoconferencing Suite

For the two lecture halls and Videoconferencing Suite 207, each room serves dual purposes: space for onsite and online lectures and a presentation venue for community events. These three rooms share the XTP CrossPoint 3200 that is rack-mounted in the centralized control room, allowing any room to serve as overflow. Since XTP extenders can send signals up to 330 feet over twisted pair cable, this easily met the distance requirements between the matrix switcher and various remote locations.

The IT staff often reconfigures the XTP system to support multi-room events, such as the college's annual cyber-security competition and special workshops for local high school students. "With what we do in these rooms, the AV system had to be versatile as well as easy to reconfigure," says Blackmore. "We went with the XTP system because it has the modularity, flexibility, and built-in features we want on campus."

AV Systems

Resources per room include a resident computer, an interactive document camera, Apple® TV, AV connectivity for digital and analog sources, a Vaddio PTZ camera system, and a mix of eight conference, handheld, and lavalier-style microphones. The PolyCom videoconferencing system for the VC Suite is rack-mounted in the control room, and can be shared to the lecture halls through the XTP system as well. At the front of each lecture hall are two, ceiling-mounted Epson PowerLite® Pro Series projectors and two 164" motorized screens. Unique content can be sent to one or both projectors.

The XTP CrossPoint matrix switcher transmits video and control signals directly to the projector. Select Epson PowerLite Pro models include an

Extron XTP Quick Setup menu feature that configures the projector's twisted pair inputs to allow it to be identified as an XTP device. The projectors are XTP-certified for twisted pair input, and can directly accept an XTP signal over the CATx cable. When the projector twisted pair input is configured for XTP mode, it enables the matrix switcher to recognize, transmit to, and control the projector without requiring a separate receiver.

A Sharp® 60" flat panel display on the back wall serves as a confidence monitor for presenters and receives signal via an Extron XTP R HWP 201 wallplate receiver. The receiver's 90-degree angle HDMI connector orientation allows low-profile installation of the flat panel display. This same XTP receiver model is installed behind the three flat panel displays in the VC Suite.

From within each lectern, an Extron XTP T USW 103 three-input transmitter provides source selection among the local equipment and connected devices with HDMI, VGA, or analog audio outputs. The Automatic Input Switching feature was activated to simplify operation while supporting the needs of guest presenters.

Because the videoconferencing system can be shared across the rooms, automatic echo cancellation – AEC was a requirement. Audio signals are routed through an Extron DMP 128 C AT 12x8 ProDSP™ audio matrix processor dedicated to each room. This model provides eight channels of AEC for in-room sound reinforcement and enhanced communication during videoconferencing sessions. It also enables routing of Dante™ audio channels in place of a local mic/line input. "The DMP 128 works especially well in terms of echo cancellation and the smooth integration with the PolyCom system," says Jerry Hein, Multimedia Production Specialist at Coastline College.

Control

An instructor is able to control their presentations using an Extron TLP Pro 1220TG TouchLink Pro 12" tabletop touchpanel. Its capacitive, edge-to-edge glass touchscreen and fast processing provide an attractive and responsive control surface. Instructors utilize the full-motion video screen to preview class material before sharing it with the



The support team uses an Extron TLP Pro 1520TG TouchLink Pro 15" capacitive touchpanel to manage all AV operations from the control room.

students. This feature is also useful for monitoring content when the staff member has trouble seeing the confidence monitor at the back of the hall.

In the VC Suite, videoconferencing is the default AV system configuration. An Extron TLP Pro 720T TouchLink Pro 7" tablet touchpanel allows users to easily control any device, such as the flat panel displays, microphones, and audio mixer. A built-in sensor automatically adjusts the screen brightness when the room lights are lowered. For overflow situations, a simple button press reconfigures the AV system to display signals from the lecture hall. A second button returns it to the original configuration. The screen design was customized to be similar to the lecture hall layout for consistency from room to room. "We find that in-room setup is very straightforward with the TouchLink Pro touchpanels," says Blackmore.

The Extron IPCP Pro 550 IP Link® Pro control processor is installed in the equipment rack. Of its eight serial ports, one loops back to the matrix switcher and five enable control of the television monitors in the three rooms and the Vaddio PTZ camera system. Eight relays allow the two projection screens in each lecture hall to be lowered and raised from the room's TouchLink Pro touchpanel, which streamlines room set up. The two remaining serial ports, along with the four Flex I/O connectors and the port for connecting an eBUS button panel, are reserved for future system expansion. With this system in place, all AV sources and display devices can be monitored and controlled from a central location. "I've been working with Extron AV equipment for years, and already know it's dependable," says Hein. "Now we've got Extron for control too, and I'm impressed with the extra flexibility and degree of control we have through the Pro Series products."

All sessions are monitored from the control room on six NEC® 24" LCD displays and three 22" monitors. An Extron TLP Pro 1520TG TouchLink Pro touchpanel provides control of any source and also controls the routing of signals between rooms. It enhances a technician's ability to provide assistance, enabling remote control of such equipment as individual microphones, PTZ cameras, and the streaming/recording system, as well as switching views for an instructor who is lost or has neglected to change a slide. "Considering the breadth of devices needing to be controlled from a single touchpanel, selecting the TLP Pro 1520TG was intuitive," says Peterson.

The support team is currently learning to use the Extron server-based AV resource management software, GlobalViewer® Enterprise, which was implemented by GST. Their goals are to be able to remotely manage all campus AV systems and to generate comprehensive analysis and reports for the college administrators.



Sessions are streamed and recorded using the Extron SMP 351 for archiving, repurposing, and publication through Coastline's learning management system.

Reliable Lecture Streaming/Recording with SMP 351

Capturing presentations for archive, video on demand, and post production was mandatory. An additional request was to be able to simultaneously stream lectures and events, as well as record. One concern was how to capture two presentations with different resolutions at the same time. The solution was to install the Extron SMP 351 H.264 Streaming Media Processor, which scales the content from the sources. "The ability to have multiple screens being recorded simultaneously for camera, PowerPoint, and whatever else is an invaluable feature for the Coastline support team," says Peterson.

According to the college, the Extron streaming media processor has proven to be a cost-effective solution for their streaming and archiving requirements. "We do quite a bit of online and distance learning, and we needed the capabilities of the SMP 351 to be able to record sessions for archiving, reuse, and publication through our learning management system," says Blackmore.

Results

The campus AV systems upgrade, from planning to commissioning, took a total of 18 months. The instructors and staff are enjoying all aspects of presenting class material in the upgraded classrooms and lecture area, specifically the fast switching between sources and the user-friendly touchpanels. GST reports that the technicians are quite happy with being able to remotely operate the lecture halls and Videoconferencing Suite 207 from the control room. "Whether it's combining multiple rooms for overflow or quickly setting up a videoconference or recording session for a special event, XTP Systems and the TouchLink Pro touchpanels give us a wealth of flexibility," says Jerry Hein at Coastline College.

The college administration concurs. "The flexibility of online and classroom instruction, combined with our high-quality programs and the affordable nature of a community college, is what has made the dream of a college degree a reality for so many people," says Chris Blackmore of Coastline College. "Using Extron digital switching, recording/streaming and Pro Series control products across campus helps us live up to our slogan of having Tomorrow's College Today."

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