

CASE STUDY

Extron FOX3 Delivers Secure AV, USB Data, and Control Over Fiber at North Carolina's Emergency Operations Center





To support the EOC, an Extron FOX3 Matrix 160x Modular Fiber Optic Matrix Switcher routes content within rooms such as the Situation Room and among all of the facility's rooms over the multimode fiber optic cable infrastructure.



The Situation Room in the North Carolina EOC provides multiple displays, including a 3x3 videowall flanked by 96" displays. AV signals from sources such as computers running specialized software, broadcast news feeds, and devices connected at the tables are sent to one or more of the displays, with all operations controlled by an Extron 15" tabletop TouchLink Pro touchpanel at the head table.

CHALLENGES

The North Carolina Department of Public Safety required an updated Emergency Operations Center (EOC) Situation Room and the addition of breakout spaces for internal groups and third-party agencies. Located on the ground floor of the National Guard's Joint Force Headquarters in Raleigh, the EOC is the state's nucleus for disaster recovery, homeland security, hazard mitigation, nuclear incident preparedness, and more. While some staff members work within the facility on a daily basis, it becomes a hive of activity during times of crisis.

The AV systems would be upgraded to support more sources, such as computers running specialized software, media servers, and broadcast news feeds. Users would be able to connect their laptops and other devices at lecterns and tables with little to no technical assistance. Display devices would range from professional projection systems to a 3x3 videowall and displays in sizes up to 96". Additional requirements were interconnectivity among all of the rooms, enhanced streaming capabilities, and accommodation of the existing videoconferencing and broadcasting systems. The entire installation had to be powerful, flexible, and dependable in this mission-critical environment. It also had to be intuitive to operate.

State officials brought in Integrated Information Systems, Inc. (IIS) to mastermind and deploy the AV system. Working closely with the state's IT team, they unanimously selected Extron FOX3 fiber optic systems.

DESIGN SOLUTION

To support those responding to a wide variety of emergencyrelated activities, the AV system in the main hub was replaced with an Extron FOX3 modular fiber optic matrix switcher and



The governor and lieutenant governor use the Media Room to conduct televised briefings, and they have full access to the room's resources from the TouchLink Pro touchpanel at the lectern or the wall.



TouchLink Pro touchpanels with an intuitive user interface such as this 10" wall-mount model in the Media Room facilitate easy selection of sources and display devices within the space.

"AV system reliability is critical in an EOC; therefore, Extron is naturally a great fit."

Tre Washington General Manager Integrated Information Systems, Inc. 14 new breakout rooms were tied in over a multimode fiber optic cable infrastructure. Prior to final commissioning, more rooms were added to the facility and connected over fiber. Total spaces include the upgraded Situation Room, which is the main hub during a crisis, and a variety of conference, meeting, and training rooms and areas designated for use by specific agencies. These range from local, state, and federal services for medical, fire, and law enforcement to public and private organizations such as FEMA and the American Red Cross.

Content from multiple 4K/60 HDMI and USB sources and camera feeds is available for presentation on the EOC's many display devices simultaneously. During a crisis, the 3x3 videowall mounted in the Situation Room is the focal point. It and the room's many other displays provide aggregated information used for crisis and resource monitoring, analysis, and services coordination. The FOX3 Matrix feeds an Extron Quantum Ultra 4K videowall processor that enables multiple windows to appear in any arrangement on the videowall. Built-in technologies such as Extron's Vector[™] 4K scaling and HyperLane[®] bus ensure precise image upscaling and downscaling and smooth presentation of sources in real time, with no variance in frame rates regardless of layout.

Breakout rooms all have access to the same resources as the Situation Room, with each room including appropriately sized display devices from 55" to 75" flat panel displays and 10,000 lumen projectors. Staff rooms include up to five workstations with a wall-mounted 75" display near each.

Rooms with at least one projection system are used to host the press and invited guests. Some examples are the Joint



Racks in the equipment room adjacent to the Command Center contain a variety of sources and the Extron video, audio, streaming, and control products.

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Nick Zimmerman Systems Engineer Integrated Information Systems, Inc. Information Center where the state coordinates the release of information to the public and the Media Room used by the governor and the lieutenant governor to conduct televised briefings with emergency staff, VIPs, and the press. For audience overflow, an entry lobby provides comfortable seating facing a 75" display. Another room with multiple display devices is the Business Emergency Operation Center that is also available to the Red Cross, commercial donors, and qualified volunteers. One Extron FOX3 modular fiber optic matrix switcher provides signal distribution to all rooms, and it can be configured to support as many as 160 inputs and 160 outputs.

FOX3 Ensures Uncompromised AV Signal Quality Throughout EOC

The FOX3 Matrix 160x, currently configured as 104x104, provides facility-wide switching and distribution of 4K/60 HDMI video, audio, USB, and control signals over the multimode fiber optic cable infrastructure. The I/O boards support 4:4:4 chroma sampling, ensuring content of the best quality is sent to the various display devices. If required, the support team can activate 3D sync over the fiber optic cable. The remaining slots on the matrix are reserved for future system expansion.

The system mapping makes it easy to route bidirectional signals, like USB and control, while still maintaining secure unidirectional data flows for video and audio within the EOC and between it and remote locations. These and other features and capabilities of the modular FOX3 Matrix, such as redundant hot-swappable power supplies and internal system monitoring, future-proof the AV system and ensure continual operation throughout a state, national, or international crisis.

FOX3 fiber optic transmitters send AV signals over a single fiber, and the receivers that serve as AV interconnects between the rooms also use a single fiber. A second fiber enables RS-232 insertion for device control through the FOX3 receiver mounted with each display device.

Extron SMP Series H.264 streaming media processors enable event recording, as well as streaming of AV content to the other rooms and the field. To help drive videoconferencing in the Situation Room, an Extron MediaPort[®] HDMI and audio to USB scaling bridge is connected to the system at the main workstation.



IIS selected the FOX3 matrix switcher model without a front panel controller to ensure only authorized individuals can access the EOC's AV system.



To drive the videowall in the Situation Room, the FOX3 matrix switcher sends 4K HDMI content to the Extron Quantum Ultra videowall processor mounted in the same rack.

"There were some pretty advanced technical demands and last minute changes to allow the Situation Room to remain functional and available at a moment's notice during the course of the installation. The Extron team made it possible to keep the EOC open, not only with their products but also with their support; everything with Extron is top notch."

Tre Washington General Manager Integrated Information Systems, Inc.

Extron Audio Products Facilitate Clear and Easy Collaboration

To support distributed audio in the Situation Room, an Extron DMP Plus Series 12x8 audio DSP processor is connected to one of the two Dante® ports on the FOX3 Matrix. Another of the audio processor's four Dante ports is connected to the facility's network. The DMP processor provides automixing and easy configuration of the audio filters, dynamics, AEC, and VoIP, as well as Dante®. It also sends audio to one of the streaming media processors and to the mic/line input on the MediaPort scaling bridge to complete the solution.

An Extron XPA Ultra Series four-channel power amplifier rack-mounted in the equipment room distributes amplified audio to Extron full-range Flat Field[®] speakers. The IIS team found the amplifier's 70 V output provided the necessary power while the half-rack enclosure saved valuable rack space. The locking captive screw output on the convection-cooled amplifier made for secure and easy integration. The 2'x2' low-profile tile speakers were simple to drop into place in the suspended ceilings, further streamlining installation.

"We selected Extron because of their industry-leading products and unparalleled support," says Nick Zimmerman, Systems Engineer at IIS. "Also, the fact that Extron has an office in Raleigh made the solution even more appealing to the client."

RESULTS

The North Carolina state officials immediately appreciated the system enhancements that enable quick, seamless content display. They use the EOC for centralized monitoring,



The North Carolina state officials immediately recognized the enhancements that enable easy, seamless content display within the Situation Room and throughout the EOC.

control, and sharing of video and audio from the wide array of sources to communicate with local personnel and those in the field. Not only is the FOX3 system effective and efficient during daily activities, the EOC's new installation has proven successful in facilitating monitoring and collaboration among diverse agencies throughout drills and response simulations. North Carolina, with their upgraded EOC, is ready for the next weather-related or civic emergency situation.

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EXTRON EQUIPMENT - PARTIAL LIST

Model	Description
FOX3 Matrix 160x no FPC	Modular Fiber Optic Matrix Switcher from 8x8 to 160x160 with no front panel controller
FOX3 I/O 88 MM	8x8 Input/Output Fiber Optic Boards – Multimode
FOX3 T 301 MM	Fiber Optic Transmitter for Lossless 4K HDMI, USB, Audio, Control, and 3D Sync – Multimode
FOX3 SR 201 MM	Fiber Optic Scaling Receiver for Lossless 4K HDMI, Audio, and Control – Multimode
Quantum Ultra 305	4K Videowall Processor with HyperLane® Bus – 5-slot Frame
Quantum IN4HDMI	Four-channel HDMI Input Cards
Quantum OUT4HDMI	Four-channel HDMI Output Cards
SMP 351	H.264 Streaming Media Processors with integrated 80 GB SSD
MediaPort 200	HDMI and Audio to USB Scaling Bridges
DMP 128 Plus C V AT	12x8 ProDSP Digital Matrix Processor with AEC, VoIP, and Dante
XPA U 1004-70V	Four Channel Amplifiers, 100 watts at 8 or 4 ohms
FF 220T	Full-Range Flat Field Speakers with Low Profile Enclosure and 70/100 V Transformer
IPCP Pro 555	IP Link Pro Control Processors with LinkLicense
IPCP Pro 255	IP Link Pro Control Processors with LinkLicense
TLP Pro 1525TG	15" Tabletop TouchLink Pro Touchpanels
TLP Pro 1025M	10" Wall Mount TouchLink Pro Touchpanels

