FACT SHEET

Centralized Audio and Video Services (over Fiber)

Fairfax County Courthouse, Virginia

December 29, 2010

INTRODUCTION

Centralized Audio and Video (A/V) services are provided to all technology enhanced courtrooms. A fiber backbone is in place to the Courthouse thru single mode fiber to a centralized A/V system (CTMS - Courtroom Technology Management System) to all Fairfax County courtrooms utilizing CTMS.

The decision to utilize this infrastructure was made with emphasis on the following:

a) consistency in infrastructure between Fairfax County agencies
b) a secure method of transporting the A/V and data within the courthouse
c) distance limitations of copper
d) the need for a distributed infrastructure for a secure, closed circuit video system
e) research and analysis conducted between copper and optical equipment in support of a centralized system

BACKGROUND

Fairfax County conducted a high-tech courtroom pilot program in 2006 to better determine the methods and equipment necessary to provide audio systems, display systems, evidence presentation methods and video teleconferencing within the courtroom. The pilot provided an effective A/V blueprint in preparation for the construction of 17 new courtrooms and for the future renovation of 26 existing courtrooms. In addition to courtrooms, a pilot system for remote arraignments between the courtroom and the Fairfax County Adult Detention Center (ADC) was implemented. Arraignments were conducted over a point-to-point optical system or rather a closed circuit conferencing system. The pilot project offered many recommendations for improvements that were developed into a formal requirements document for inclusion and expansion of modern technology into the Fairfax County courtrooms.

Finding a solution to provide all courtrooms the ability to conduct video arraignments, advisories and bond motions with the ADC over a closed circuit system with high quality audio and video was a major priority. In order to provide video access to the ADC from any courtroom, a centralized, routable solution was required.

In a centralized environment, expensive hardware such as Video Teleconferencing Codecs can be shared amongst the three courts; making them cost effective with additional functionality such as; centralized and overflow courtroom monitoring, centralized test and measurement systems, test patterns and cable television video. Courtroom overflow monitoring allows proceedings or courtroom events to be viewed in other courtrooms.

Sharing Codecs through a centralized Master Control Room resulted in a total savings of approximately 20% of the cost of the codec hardware and software and other conversion devices when compared to a stand-alone

solution requiring installation and integration of a single codec in each courtroom. Additional recurring cost savings are realized by the reduction of leased ISDN circuits and limited courtroom rack space. Using a courtroom to codec ratio of 5:1 the Courtroom Technology Management System is easily scalable to add courtrooms in the future and reduces the cost of managing present and future courtrooms. Combining VTC with the requirement that the CTMS provide both camera video and evidence video simultaneously, it was necessary to design a system with the ability to route both composite video and RGBHV video. A cautious approach was taken so as not to create a situation that did not support the future migration and technology into HD formats. Taking all of these requirements into consideration along with the desire to have a solution that is scalable over time, the optimal choice for a centralized routing system would be format independent, high bandwidth and scalable.

CONCLUSION

Fairfax Courts requirements indicated a need for centralized A/V routing of composite video and RGBHV video. An analysis between an optical router solution (routing is electrical, connections are optical) compared to other analog routers demonstrated that the initial expenses for a fiber router or analog routing system are approximately the same in terms of actual equipment cost for the five original courtrooms, ADC and installed codecs.

At this point, the primary distinctions between the two systems were:

a) total number of terminations
b) amount of interconnect cabling required and the labor to install

All things considered, an analog routing system in a centralized location is more expensive to install than a fiber router. At the time of inception, the total cost of a analog routing systems' over the project lifecycle was projected to be 2.6 times more expensive than scaling the selected optical router solution to meet future demand.

The Evertz EQX optical router solution was chosen to provide the core of the central routing capability at the Fairfax County Courthouse. It was determined that the benefits gained over the long term combined with the ability to easily scale the system to meet the demand for growth would provide a much higher return on investment and minimize day-to-day operations and maintenance support requirements.

OPTICAL ROUTER (EVERTZ EQX) BENEFITS

The Evertz EQX Router provides the following benefits:

1. Scalability

    a) The router can be populated with Input/Output cards in units of 18 up to 288 X 288.
    b) The router can be expanded to include format conversions for forward and backward compatibility between courtroom system types.

2. Format Independency

    a) Composite Video, RGB video and HD video can all be routed through the EQX simultaneously including various resolutions of each format up to 3.1 Gbs/second.
    b) Meets all standards by the Society for Motion Picture and Television Engineers (SMPTE) for the formats listed.

3. Redundancy

    a) Redundant Power Supplies
    b) Redundant Crosspoints
    c) Redundant Controllers
    d) Designed to be mission critical with high availability

4. High Bandwidth

    a) The router is capable of data speeds up to 3.1 Gbs/second per I/O
    b) Bandwidth does not reduce with traffic.

5. Automation Support

    a) The router can be controlled by various control systems, including Crestron

6. SNMP support

    a) The EQX provides system monitoring, alarming and remote configuration through traditional IP networks

7. Signal Integrity

    a) No grounding issues to cause video or audio hum
    b) Digital data re-clocking eliminates jitter

8. External Connections

    a) All data for video and the audio reside on one connection per I/O

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