

COMMAND CENTER SCENARIO

# Chicago Police Department

## Q-SYS Platform Enables Faster, Smarter Police Work for Chicago's Command Center

📍 Chicago Illinois

It sounds simple. Studies have shown that if police have better information when they arrive on the scene of a crime, they are more likely to make an arrest that will lead to a lawful conviction. What's not so simple, however, is assembling and communicating the relevant data quickly enough that officers on the street have it when they need it. That's the task of the Chicago Police Department's Crime Prevention and Information Center (CPIC). "Its mission is to provide real-time information to support officers in the field as they investigate a crime or intercede with a situation in progress," according to Jon Chuchla of Chicago-based Audio Visual Systems (AVS), who designed the system using [Q-SYS](#) for audio and control.



“**The support, reliability and flexibility of Q-SYS products have made a huge difference in our ability to help the Chicago Police and their officers on the street through CPIC.**”

**John Chuchla**  
Audio Visual Systems

## Challenges

### Full Audio Integration

The system needed to accommodate sixteen command center officers, who all needed to access and route audio & video inputs from fifty different police system inputs and six Cable TV sources, but the existing control technology was relatively limited. Q-SYS allowed for digital transport and switching of all of these various audio sources. The routing system consisted of two Q-SYS Core 500i (now available as the updated [Q-SYS Core 610](#)), five [Q-SYS I/O Frames](#) and sixteen [Q-SYS I/O-22 devices](#). Cores and I/O Frames were remotely located within the same racks that house the audio sources. There is one I/O-22 at each workstation to connect to the telephone equipment and the headset for each operator.



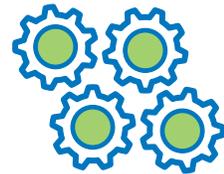
#### Physical Separation of Systems

For legal and policy compliance, the CPIC needed to separate information sources in three equipment rooms across different parts of the block-long police headquarters.



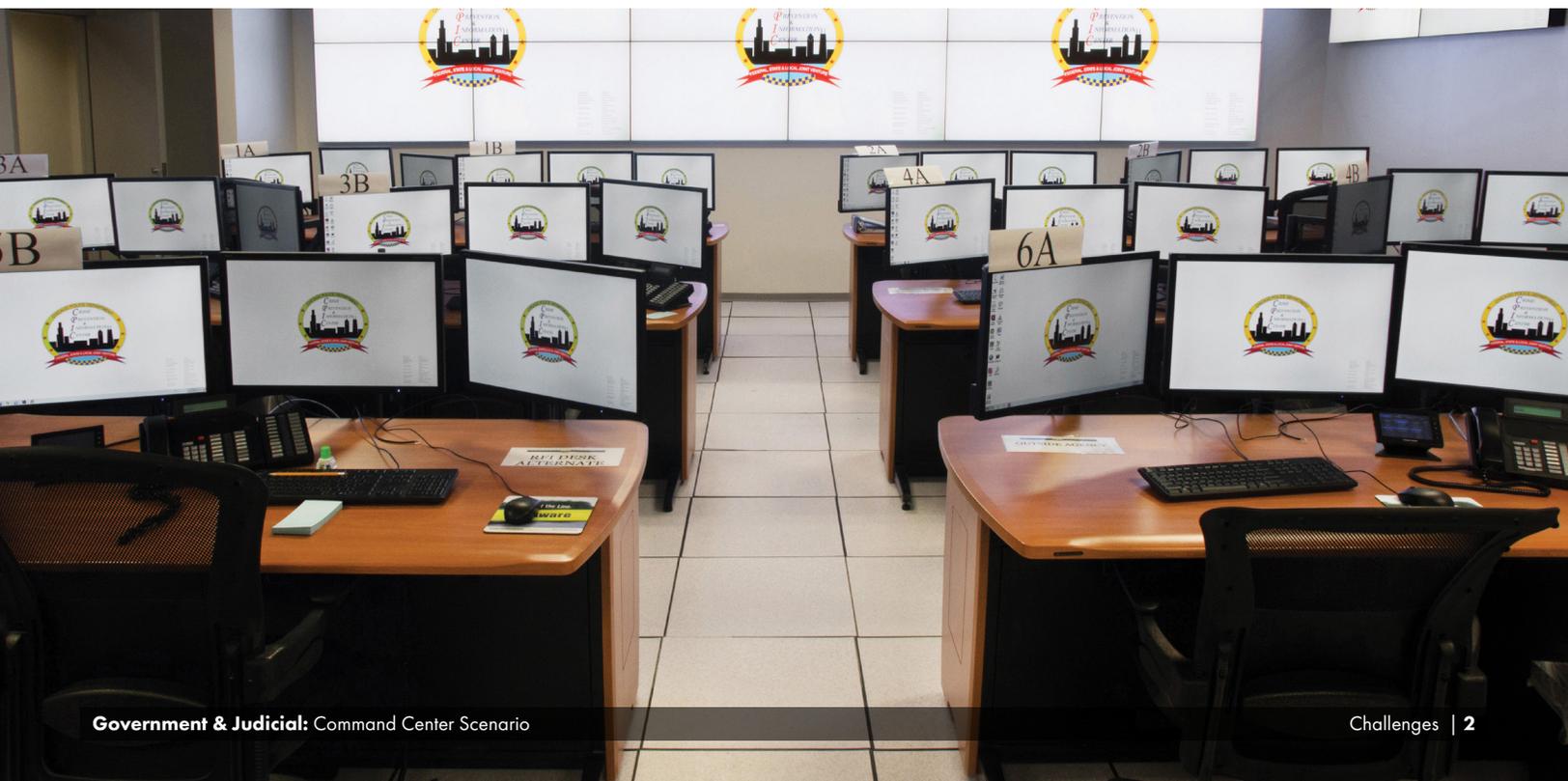
#### Simplicity

In the heat of an emergency, the last thing anyone wants is confusion over how to access a piece of information or how to open a communications channel.



#### Support

The CPIC provides mission-critical info to the Chicago Police. The system must be fail-safe, remotely monitored, and receive full support when issues arise.



## Solutions

### Keeping Things Simple

Each station allowed the operator to choose between three AV sources and send each to one of three computer monitors installed at that workstation, and Q-SYS routed the incoming and outgoing audio signals automatically.

However, the CPIC needed more than just simple audio switching. Each operator needed the ability to listen to the primary channel while peripherally monitoring secondary audio channels. “If an operator is on the telephone but he or she has a radio channel open as well, they need to hear if someone is trying to come in over the radio,” Chuchla explained. Similarly, operators can listen for related announcements being played over the room’s four [Q-SYS AC-C4T ceiling loudspeakers](#) while still focusing on their primary open channel.

“This scenario is quite difficult and cumbersome on other DSP platforms” Chuchla said. “Standard routers generally default to muting a previously selected source when you switch to a new source”. Working with Q-SYS’s Application Engineering Team, Chuchla created a custom Lua scripting block within Q-SYS that managed a complex channel attenuation scheme.

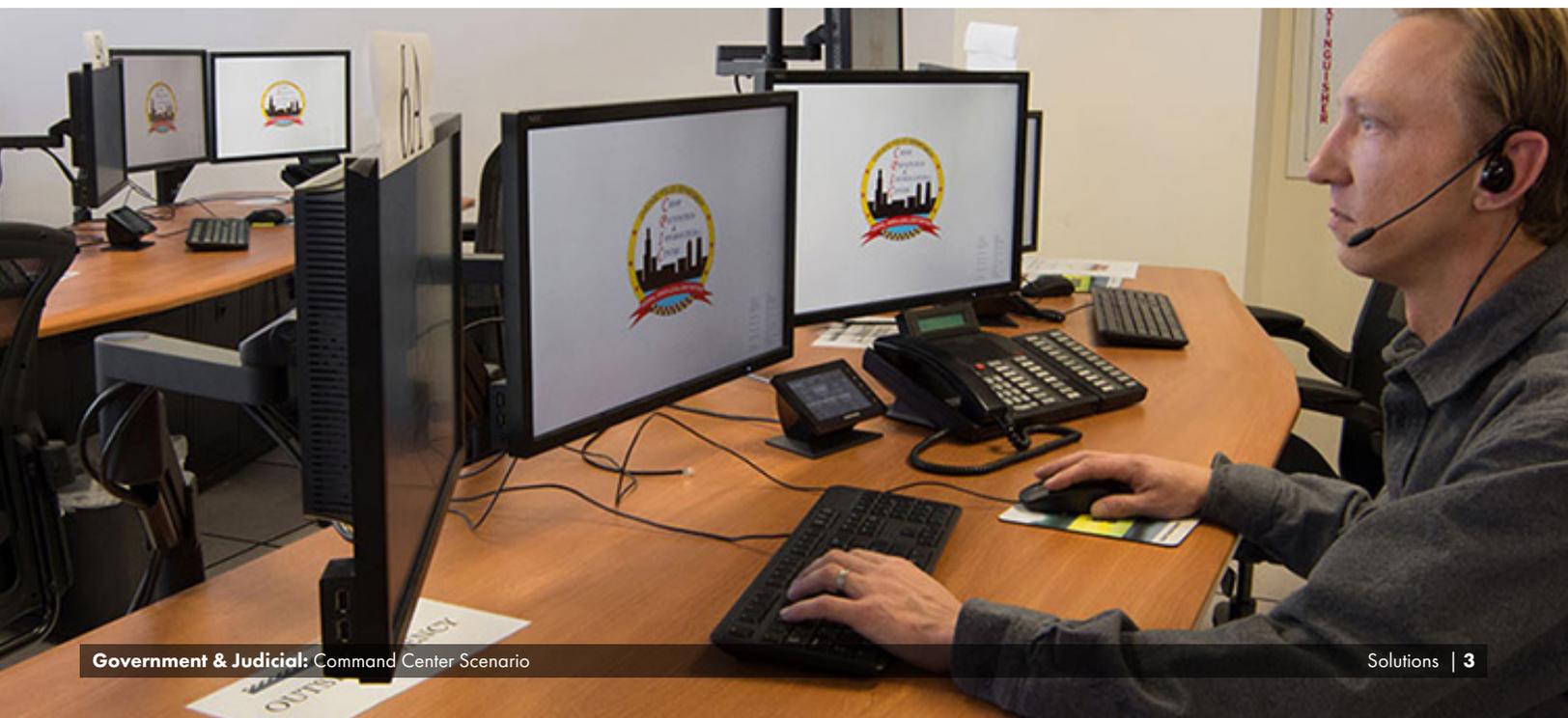
In addition, the system used automatic gain control and noise cancellation to ensure that each source had the same volume level. They also took advantage of Q-SYS software-based acoustic echo cancellation for video conferencing.

### Third Party Control

To further simplify operations, CPIC utilized Q-SYS’s ability to interface with third-party devices. For example, when a gunshot is identified by the CPD’s city-wide gunshot detection system, a custom script in Q-SYS triggers an audio tone on the operator’s headset while ducking whatever he or she may be listening to. The system also employed audio-based logic – for example, if no one is actively monitoring the gunshot system and an alert comes through, Q-SYS will alert other personnel via their touch screen controller. The system also used the Q-SYS GPIO blocks to control the hook switch status of the telephone hybrids. Operators control their audio switching via a video control system, which communicates to the Cores via Q-SYS external control protocol.

### Cores Divide and Conquer

Separate design files ran on each Core, and Chuchla used these to create two large matrix switchers within the Cores. “For security reasons, each of the Cores handle half of the inputs and outputs, plus about half of the auxiliary audio sources, such as the audio from the TV tuners and video conferencing system.” The ability to utilize Q-SYS’s Core-to-Core Streaming functionality, which sends specific audio streams between Cores, was crucial. To enhance reliability, a redundant audio network was employed two standard [Cisco SG-200](#) switches in each location.



## Solutions

### System Support

Chuchla said “AVS has developed a great working relationship with Q-SYS over the past several years. We have never had a hardware failure. Q-SYS has proven 100% reliable for AVS. Q-SYS is also extremely flexible and allows us to easily program functions that would be difficult or impossible with other systems.”

“As a company that offers 24/7 service, we placed a very high value on the ability to monitor and service Q-SYS systems remotely. It allows us see the monitor our client’s systems, using tools like the Hover Monitor, which allowed us to remotely listen to any workstation’s input channels. Quite often this single feature allows us to fix a problem before our service engineer can find his boots.”

Still, Chuchla said the biggest reason he prefers Q-SYS is the quality of the service and support from Q-SYS and its local representative. “Our local reps (Audio Biz) also have a programming specialist on staff, who came out to help me as I thought through this complex system. Q-SYS should be commended in putting local feet on the street.”

Chuchla added, “The support, reliability and flexibility of Q-SYS products have made a huge difference in our ability to help the Chicago Police and their officers on the street through CPIC.”



Q-SYS is a globally recognized manufacturer of audio, video and control (AV&C) solutions for huddle rooms to stadiums—and everything in between. Our systems make it easy for your team to design and integrate flexible, scalable solutions and deliver the native IT integration and standards-based technology your customers expect.

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**QSC, LLC**  
1675 MacArthur Blvd.  
Costa Mesa, CA 92626 USA

**Phone** 1.714.957.7100  
**Fax** 1.714.754.6174  
**Toll Free** 1.800.854.4079  
**Outside the U.S.** 1.714.754.6175