

HYBRID PROCESSING AND SOFTWARE-BASED CONTROL

# Camp Randall

## Camp Randall Scores Big with the Q-SYS Audio, Video and Control Platform

📍 Madison, WI

Located on the campus of the [University of Wisconsin](#), Camp Randall Stadium has been home to Wisconsin Badgers football since 1895. Not only was the stadium built on the grounds of historic Camp Randall, a Union Army training camp during the Civil War, but it also features of seating capacity of 80,321, which puts it in the ranks of some of the largest stadiums in the world. The stadium first installed a Q-SYS system after converting from BASIS (Q-SYS original network distribution technology) but years later, a renovation deployed the [Q-SYS Platform](#), featuring the latest Intel XEON-based Q-SYS Enterprise Cores, to expand the system into all athletic facilities across the campus.



“Thanks to Q-SYS, we are delivering the best gameday AV experience for our students and fans.”

**Shay McElwain**

Technical Systems Director, University of Wisconsin Madison Athletic Facilities

## Challenges

Stadiums typically require robust and reliable network AV systems to manage audio distribution for game days, concerts and other events, along with the ability to control audio and video sources on touch panels across the complex, and this installation was no different.



### Hybrid Processing Architecture

Camp Randall required fully centralized audio, video & control processing throughout the stadium, but also wanted to deploy processors in some of the athletic facilities.



### Wide-area Audio and Paging Distribution

The AV system needed to be able to distribute gameday audio and announcements throughout the venue's many zones.



### Customized User Control

The venue's club areas also needed simple AV control for use during games and other events.



### Future Scalability

The AV system will continue to grow with new zones and additional sources, so it was crucial that the system be software-based to best prepare for future growth.





# Solutions

## Centralized AV Processing

Camp Randall deployed a redundant [Q-SYS Core 5200 Enterprise Processor](#) setup along with distributed network-based AV endpoints, such as amplifiers and audio I/O, throughout the facility. Being a software-based platform, built on powerful Intel chipsets, there is no need to deploy additional hardware to control or manage the distributed endpoints. This results in far less hardware than a traditional AV installation, and greatly streamlines the ability to support the system along with other mission-critical services. Additionally, the use of Intel XEON processors in the Enterprise Core offers significant headroom for additional software-based features and functionality to be added to the system in the future.

The primary function of the Q-SYS system is to handle audio processing for over 90 Q-SYS amplifiers ([PL Series](#) and [CX Series](#)), which connect to the system via Q-SYS I/O-Frames installed with DataPort I/O cards. This allows for control and monitoring of each amplifier via [Q-SYS TSC Touch Screen Controllers](#).

Regardless of the event type, AV systems that support live events are mission critical. Camp Randall had years of success with Q-SYS, and was looking for increased processing headroom and additional channel capacity along with the ability to expand into additional areas of the venue.

With an outdoor stadium in Wisconsin, temperature and humidity can change significantly throughout the day, affecting how sound travels. Q-SYS allowed [Daktronics](#) (system integrator for the Camp Randall system) to program a unique automated delay structure (thanks to the [Q-SYS Scripting Engine](#)) that would change audio delay times based on the temperature and relative humidity in each zone.

The secondary functions include distributed gameday commentary audio and background music along with softwarebased paging, which allows for important announcements to be heard throughout the venue.



# Solutions

## Distributed AV Processing

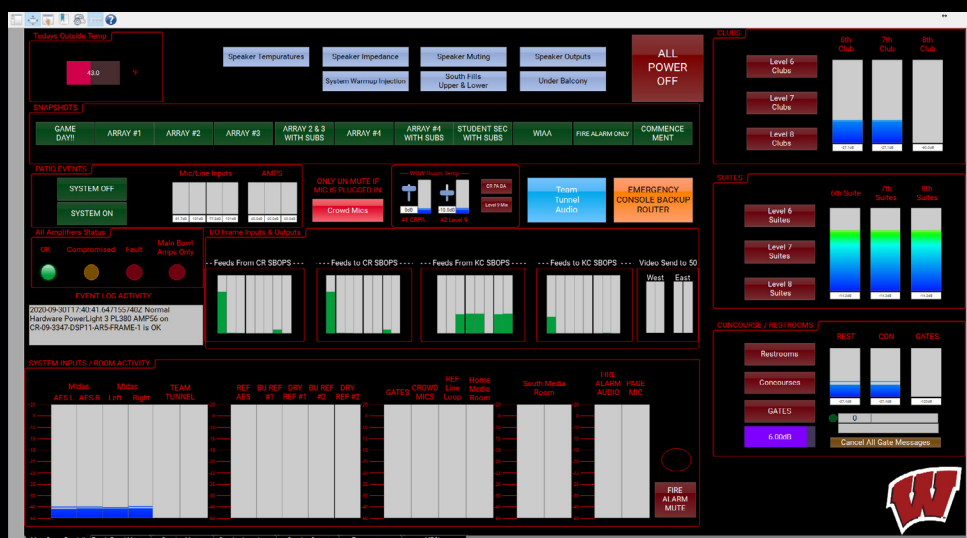
After years of continued success with the Q-SYS system, Camp Randall wanted to expand into additional athletic facilities and practice venues. Each of these facilities feature a standalone or redundant Q-SYS Core processor setup, which allows for local I/O and processing when necessary. To create an interconnected “system of systems” Camp Randall also took advantage of Core-to-Core streaming, which allows for intercommunication between Q-SYS Cores processors via WAN. This allows for each of the facilities to stream audio sources from the main system, including gameday commentary, background music, and other announcements.

## User Control Simplified

Shay McElwain, Technical System Director, who oversees all University of Wisconsin Madison athletic facilities, was an early adopter of the Q-SYS Platform and was quick to take on programming responsibilities after commissioning of Q-SYS software-based control capabilities. “I love how user-friendly it is to design, deploy and maintain a Q-SYS system,” McElwain explained. “Whether it’s creating a [user control interface \(UCI\)](#) or working with the Q-SYS Scripting Engine, the simplicity is unmatched in other platforms. It’s allowed me to handle the majority of the system expansion in-house, which has brought major cost savings.”

McElwain used the Q-SYS UCI Editor to create custom UCIs for the club/suite areas, letting visitors select the gameday audio source – PA announcer, radio broadcast or TV broadcast, or they can choose to listen to the audio in the bowl, which includes the PA announcer and the University of Wisconsin band. For a more personalized music experience outside of game days, integrated [Attero Tech by Q-SYS wall plates](#) were installed in practice facilities to allow athletes connect to audio from the mobile devices via Bluetooth and control via Q-SYS touch screen.

For the support staff, a more complex UCI gives technicians greater insight to the how the system is performing. Technicians can view individual loudspeaker and amplifier temperatures, monitor amplifier status, and change the power state of specific zones, along with the ability to monitor audio levels and make source level adjustments to the clubs and suites, all from a single Q-SYS Touch Screen Controller.





## Solutions

### Looking into the Future

Camp Randall adds about 6-10 new audio sources to their game day production per year, and hopes to add a number of outdoor suites stock with custom multimedia experiences to the system as well. The software-based nature of the Q-SYS Platform, coupled with the processing headroom provided by the Enterprise Q-SYS Core processors allow for future expansion that is both simple and cost-effective, as there is no need to add control processing hardware (or unnecessary integration points) when adding new AV endpoints.

"I've been working with Q-SYS a long time, and there's a reason we keep coming back," McElwain continued. "Thanks to Q-SYS, we are delivering the best gameday AV experience for our students and fans."












## Q-SYS Equipment List

Model	Pcs Used	Description	Image
<a href="#">Core 5200</a>	2	Q-SYS Enterprise Core Realtime Q-SYS AV&C operating system Network I/O: 512 x 512	
Core 510i (now updated to <a href="#">Core 610</a> )	2	Q-SYS Integrated Core Software-based audio, video & control processor Network I/O: 256 x 256 Eight audio I/O card slots	
Core 250i (now updated to <a href="#">Core 610</a> )	2	Q-SYS Integrated Core Software-based audio, video & control processor Network I/O: 64 x 64 Eight audio I/O card slots	
<a href="#">Core 110f</a>	3	Q-SYS Unified Core Audio, Video & Control processor Network I/O: 128 x 128 Local I/O: 24	
<a href="#">I/O Frame</a>	34	Q-SYS I/O network Interface 4x I/O card slots for up to 16 channels of I/O into the Q-SYS network	
I/O-8 Flex (now updated to <a href="#">QIO Series</a> )	1	Q-SYS I/O network interface Eight Flex I/O channels allow for integration of analog audio devices into the Q-SYS network	
<a href="#">I/O-22</a>	2	Q-SYS I/O network interface I/O channel count: 2 x 2 built-in 8.5 W mono amplifier for local loudspeaker	
<a href="#">PL325</a>	32	PowerLight 3 Series 2-ch power amplifier with DataPort connection for control and monitoring within Q-SYS Ecosystem 500 W per channel @ 8 Ω	
<a href="#">PL340</a>	4	PowerLight 3 Series 2-ch power amplifier with DataPort connection for control and monitoring within Q-SYS Ecosystem 800 W per channel @ 8 Ω	

## Q-SYS Equipment List

Model	Pcs Used	Description	Image
<a href="#">PL380</a>	4	CX Series 4-ch, 70 V power amplifier with DataPort connection for control and monitoring within Q-SYS Ecosystem 200 W per channel	
<a href="#">CX302v</a>	1	CX Series 2-ch, 70 V power amplifier with DataPort connection for control and monitoring within Q-SYS Ecosystem 200 W per channel	
<a href="#">CX602v</a>	11	CX Series 2-ch, 70 V power amplifier with DataPort connection for control and monitoring within Q-SYS Ecosystem 400 W per channel	
<a href="#">CX1102</a>	1	CX Series 2-ch, low-Z power amplifier 700 per channel @ 8 $\Omega$	
<a href="#">CX-Q 4K4</a>	6	CX-Q Series 4-ch network amplifier for the Q-SYS Ecosystem 1000 W per channel @ 8 $\Omega$	
<a href="#">PS-1650</a>	1	Q-SYS network page station paging peripheral for the Q-SYS Ecosystem available with gooseneck or handheld microphone option	
<a href="#">TSC-3</a>	10	Q-SYS Touch Screen Controller (wallmount) 3.5 in (88.9 mm) screen dimension 320 x 240 resolution	



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.

[qsys.com](http://qsys.com)

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