

DESIGNING THE IDEAL E-SPORTS AUDIO-VISUAL SYSTEM

BY ANTHONY CORTES





Esports competition continues to enjoy increased popularity and rapid adoption, both professionally and at educational institutions. Recognizing the rising importance of esports in the views of current and prospective students, educational institutions are introducing esports programs and clubs, actively recruiting members for their teams, and offering scholarship opportunities. Selecting the right audio-visual (AV) system designed to meet both player and spectator needs is one of the most important decisions planners can make when establishing an esports space.

Importance of Professional Design

As schools and universities develop facilities to support their esports programs, they are discovering that a well-designed AV system can greatly enhance the user experience, building educational skills and innovative problem-solving abilities for players. Esports systems should be purpose-built to meet the unique requirements of the space, the equipment, the players, coaches, and audiences

in the room and around the world. To ensure a comprehensive framework, the AV system must meet several key parameters, including the following:

- **High Performance AV Switching and Distribution**
Supercharged gaming workstations run at high resolutions, refresh rates, and color depths. The AV system must be able to switch and distribute these signals with pristine quality and in many cases, near-zero latency.
- **High Caliber Multi-Window Processing**
Complex gaming spaces can benefit from a modular 4K videowall processor with high-performance scaling and windowing technology to enhance audience engagement. Critical pixel detail is preserved, even when presenting a source at a fraction of the original resolution, with the flexibility to show multiple windows of content, including the audience, player reactions, and gameplay.

- **Robust Sound Reinforcement and Speech Intelligibility**
Sound plays an integral role in the esports experience. Flexible audio signal processing, mixing, and powerful amplification can ensure audio is heard clearly and intelligibly within the space. Dante-enabled products are recommended to distribute digital audio over local and wide area networks, as well as routing audio to recording devices within the system.
- **Automation and Ease of Use**
Esports AV systems can be complex, so an intuitive, easy-to-use control system is critical since it allows coaching staff to focus on the athletes instead of system operations. A control system enables automation of common tasks such as source selection to deliver content to the appropriate displays, powering the system on or off, adjusting audio levels, lighting, camera feed selection, and easily switching to another mode to support additional uses of the space. Being

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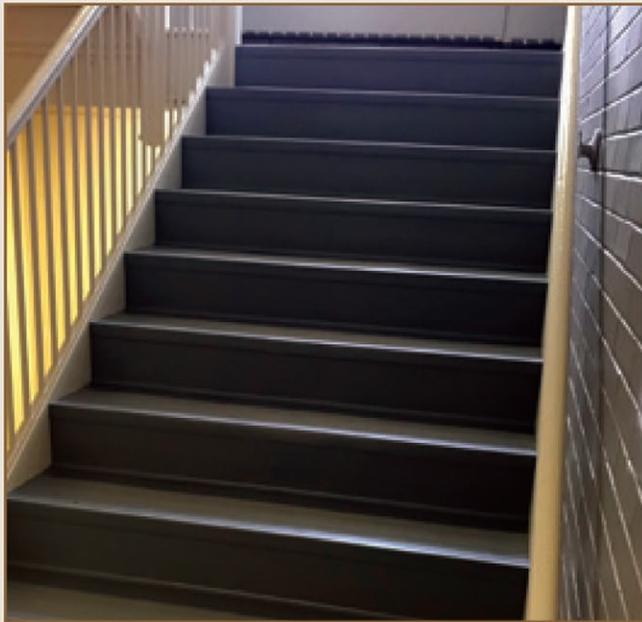
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able to manage and remotely monitor these processes in real-time streamlines operation by greatly simplifying tasks.

- **Futureproof AV Designs**

Since gaming technology changes rapidly, AV systems must be agile to keep up with the demands of future gaming requirements.

- **Design Considerations for the Space**

Esports players compete in virtual cyberspace. Their playing fields exist inside computers and on networks. Esports would not exist without electronic technology; indeed, the term esports is shorthand for *electronic sports*. Venues vary in scale and complexity from smaller practice spaces to large arenas. Here are important factors to consider when designing network-based AV systems for these facilities:

- **Types of Gaming**

Is the space for practice, or competition? Both types of facilities use high-performance computers and player displays. Competition adds requirements for large displays or videowalls, powerful audio systems for in-room fans, and low-latency internet streaming connectivity for teams competing on a global scale and fans following the live action worldwide.

- **Multipurpose or Dedicated Venue**

Will the space be used for purposes other than esports, such as serving as a classroom or lecture hall? AV systems include intuitive control that allows non-technical instructors to easily convert the room's video and audio to accept multimedia lesson material from lectern sources such as a guest laptop or a document camera.

- **New Construction or Existing Space**

Will the project include building a customized venue from scratch, or simply repurposing an existing room? If the project includes new construction and budget isn't a limiting factor, the room can be outfitted with accommodations completely customized for high-performance gaming, including gaming chairs and tables with built-in computer cable routing; videowalls, surround sound, and comfortable seating for audiences; HVAC sized to keep everyone comfortable, accommodating heat loads from equipment and crowds; power and network cable infrastructure capable of handling high electrical and data loads, etc. As with any remodeling project, if an existing space is being converted, compromises will be necessary. Planners should

take care not to skimp in areas that have a direct impact on the gaming experience such as the network and the AV setup.

Recommendations for Creating Winning Esports Spaces

- **High Performance Gaming Computers and Peripherals**

Whether for recreation, training, or competition, gaming computers are in a class of their own. Professional esports facilities rely on powerful desktop computers that have more cooling capacity, multi-output graphics cards, and 24" to 32" gaming monitors.

- **AV Infrastructure**

A robust infrastructure is vital to accommodate all the signals sent throughout the facility. Signal transport technologies include copper, fiber, and streaming, all of which help maintain unaltered end-to-end signal paths. AV systems are tailored to the type of gameplay taking place in the facility, based on game specifications and how the facility is being used—local practice, training, coaching, or competitive play. Tips for a well-designed infrastructure that meets key requirements include:

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Video Latency Player: input should register from source to display with zero lag and latency. Methods for minimizing video latency can include using high-performance cabling for longer cable distances, along with AV signal extension, switching, and distribution products.

Video Resolution and Refresh Rates: Dual output gaming PC video cards typically drive both outputs at the same refresh rate. It's important to prevent video cards from throttling fast gaming monitors to accommodate the lower refresh rates of AV systems. Planners should consider downscaling the video card output to the AV system using a video scaler to accommodate the native refresh rate of the switching and distribution equipment. This strategy keeps the competitors' monitors running at near-zero latency while providing audiences with high-quality images and imperceptible lag, whether watching on local screens or streaming online.

AV for Practice Facilities: Ideally, practice facilities are dedicated spaces with multiple game consoles and gaming computers. In a typical AV configuration, the HDMI output of each console drives two gaming monitors, one for a player and the other for a coach. Seated side-by-side and watching the same action, the player and coach interact in real time to assess skills and plot tactics. The coach also has AV controls to route gameplay from one or more players' game console to wall-mounted displays for wider viewing during team drills. High-resolution, high-fidelity video and audio are distributed uncompressed over fiber optic cabling to maintain maximum image and sound quality. Streaming media processors enable recording and outbound streaming of gameplay to audiences on popular gaming platforms like Twitch.

• **AV for Arenas**

These venues are outfitted with high-speed internet, large videowalls, special-effects

stage lighting, concert-caliber sound systems with sophisticated sound mixers, and multi-camera setups under control of directors running live-action production switchers. AV systems include switching and distribution equipment capable of 4K or higher video resolution. To support user interaction with arena technology, a control system comprised of controllers linked to touch panels with intuitive user interfaces is situated in a broadcast studio off the main gaming floor so as not to distract players. The studio also originates live streaming action feeds to specialty gaming platforms and sports broadcast networks.

• **Network Infrastructure**

The network must be strong enough to support the digital action of all the gamers playing simultaneously. Slow connections will frustrate players as well as spectators who are viewing the broadcast. Also, planners need to address any other IT network requirements or policies to avoid productivity impacts.

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The growth of esports and many types of supporting venues brings opportunities for educational institutions to attract new students and build a stronger community and brand. Delivering optimal experiences for those on the “field,” as well as those in the “stands” is imperative. Esports relies on an extensive mix of specialized equipment, much of it using cutting edge technology, that must meet strict requirements to qualify for use in tournaments.

To ensure an esports design that will elevate an institution and keep it competitive, planners should anticipate that demands will continue to grow on the AV infrastructure of the esports venue, including audiovisual production capabilities and network. Planners need to think for the future, allowing sufficient performance margin and scalability in the AV system and network to ensure that players maintain a competitive edge and that audiences stay engaged. Administrators must engage the

right technology partner to examine the best approaches and cost considerations for AV distribution, scalability, and futureproofing. Additionally, designers need to always keep the users—players and audiences—front of mind when making design decisions. Planners should keep things as flexible, streamlined, and intuitive as possible to make the esports facilities state of the art, user-friendly, reliable, and exciting.



ABOUT THE AUTHOR: Anthony Cortes is the Director of Sales and Marketing, Education Classroom Systems, for Extron. He is responsible for the development and execution of all classroom programs. Anthony’s extensive work with universities and education resellers gives him unique insights on the current state and future direction of classroom AV systems. www.extron.com/esports. For esports project assistance, contact esports@extron.com

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