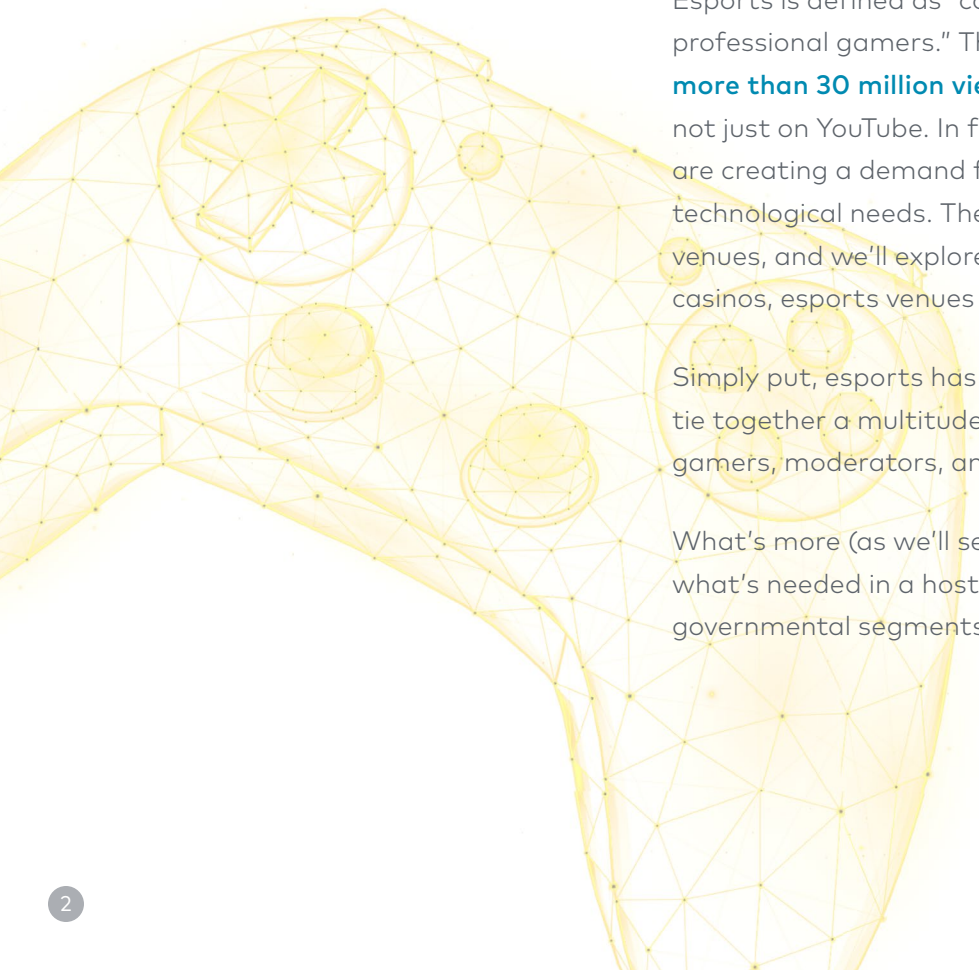
Planning for the Ultimate Esports Experience

ESPORTS: WHERE TECHNOLOGY DRIVES EXPERIENCES, IN REAL-TIME

PART ONE ▪ THE BASICS

What are esports? ▪ Who's playing? ▪ What you'll need

REAL-TIME EXPERIENCE IS MISSION CRITICAL

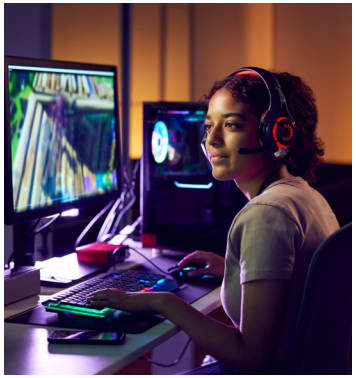


WHAT ARE ESPORTS?

Esports is defined as "competitive tournaments of video games, especially among professional gamers." That simple description belies the segment's size: **By 2023, more than 30 million viewers will be watching these games every month** — and not just on YouTube. In fact, viewing venues the size of "physical" sports arenas are creating a demand for professional integration and gear that meets esports' technological needs. There are smaller installations, too, from labs to training venues, and we'll explore the requirements of each. From university campuses to casinos, esports venues are popping up everywhere.

Simply put, esports has emerged as one of the most in-demand applications that tie together a multitude of technologies into a single experience in real-time for the gamers, moderators, and spectators.

What's more (as we'll see later), those technologies are remarkably similar to what's needed in a host of other applications in the corporate, educational, and governmental segments.



WHO'S PLAYING?

Esports often takes the form of organized, multiplayer video game competitions, particularly between professional players, individually or as teams. Although organized competitions have long been a part of video game culture, these were largely between amateurs until the late 2000s, when participation by professional gamers and spectatorship in these events through live streaming saw a large surge in popularity. By the 2010s, esports was a significant factor in the video game industry, with many game developers actively designing and providing funding for tournaments and other events.

WHAT YOU'LL NEED

The user experiences regarding esports functionality are more "mission-critical" than in standard applications because the experience is in real-time. Near-zero latency is a core aspect of the performance.

You'll need, for example:

KEYBOARD, MOUSE, AND JOYSTICK CONTROLS that can be immediately processed. These devices provide the front-end control over the game itself that determines decisions that need to be made while playing.

ADVANCED PROCESSING OF DISPLAY REFRESH RATES to ensure smooth motion on the screen. That motion is directly tied to the reactive decisions that a gamer needs to make.

MULTI-SOURCE, MULTI-FORMAT routing.

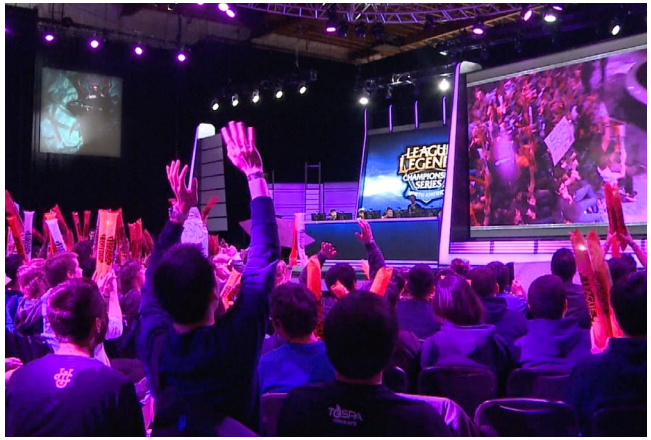
ADVANCED INTEGRATION with mics, speakers, multi-displays, capture, streaming services, and so on.

MULTI-USER ENVIRONMENTS where teams and individuals only need an intuitive experience to use the system, requiring little to no training.

AN EXPERIENCE THAT GIVES USERS CONTROL over what games they prefer to watch publicly, as well as audio levels, lighting, climate, and supporting devices such as cameras and displays.

A BACKEND MANAGEMENT PLATFORM giving IT managers complete visibility into the application and enabling prescriptive insights to keep the system running at optimal levels.

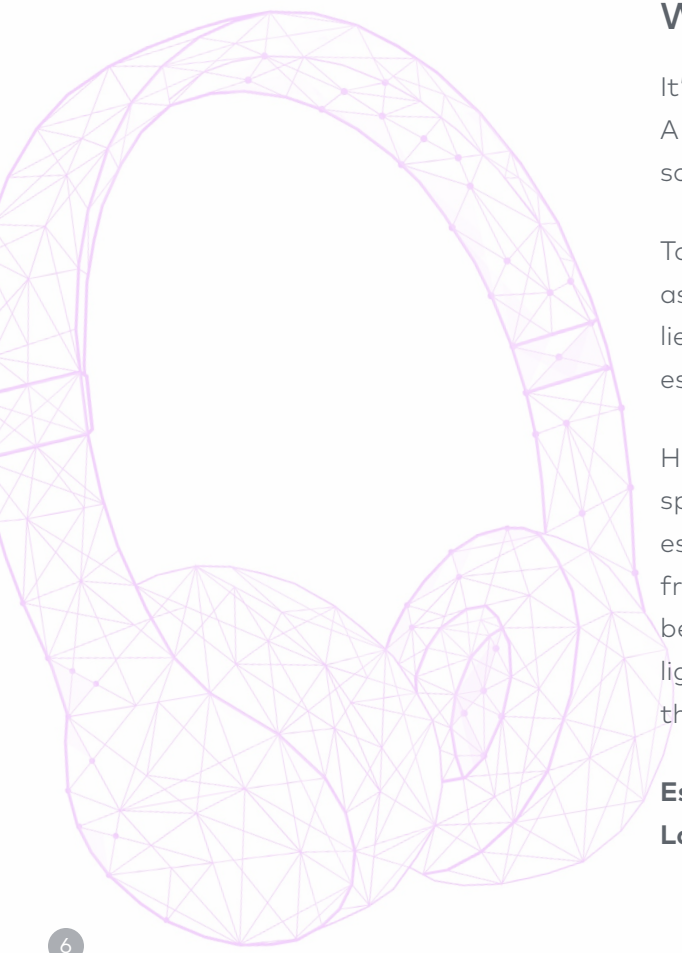
As a result, they require higher levels of planning to define processing speed, interoperability, bandwidth, signal routing reliability, security, and integrity and device management for uptime. This will ensure the ultimate experience for gamers, moderators — and even spectators.



PART TWO ▪ THE VENUES

Where are esports played? ▪ Fundamentals of each space ▪ Labs, Training, and Competition Venues

THERE ARE CONSTANTS ACROSS ALL VENUES.



WHERE ARE ESPORTS PLAYED?

It's critical to think of esports as any sport that can have players and spectators. A key aspect of this is understanding that just as any sport has levels of interaction, so does esports.

Take, for example, basketball: It's a game that can be played in a venue as small as a driveway to something as large as an NBA arena. Between those extremes lie everything from public parks to high school gyms — it's the same concept with esports.

However, there's a key difference: It's important to understand that unlike major sports that feature athletes that are in action and provide motion for excitement, esports players are static and do not move. The excitement and action come from the graphics of the games themselves and the specific environment they are being played in. Therefore, AV applications — combined with other elements like lighting and sound reinforcement — are absolutely paramount to the success of the esports space.

Esports venues can commonly be found in three sizes: Labs, Training Venues, and Competition Venues.

FUNDAMENTALS OF EACH SPACE

No matter what size esports venue is being created, there are certain constants — requirements that need to be met for each type of gaming center. Those requirements are often remarkably similar to the standardization protocols needed for a large university or corporate AV project. Don't be fooled by the size of the venue being created — they all need certain foundational technologies that change very little as a project is scaled up.

HIGH-INTEGRITY IMAGERY — The best possible resolution is a big part of making the experience satisfying. As game imagery becomes ever more realistic, display solutions have to keep pace.

SOLID AUDIO — Sound is becoming more and more a part of the sport — can players hear the footfall from an opponent behind them in a "single-shooter" style of video game? Additionally, quality microphones can help with team communications as well as the spectator (or recording) experience.

QUICK REFRESH RATES — Refresh rates, or the number of "frames per second" (FPS) displayed on a screen needs to keep up with the action. Video needs to be smooth and absent of any "ghostly" artifacts, especially when real-time reactions are key. To put this in perspective, movies are generally shot at 24 FPS, while many current games can run at 120 FPS.

SCALABLE SOLUTIONS — Is your venue equipped to handle the next generation of tech? More players? Ensure that you have the ability to "max out" the space you're creating.

PROPER LIGHTING — The right light is not only important for large, drama-filled venues. There's also the need to light players as these venues scale up — images of players are often displayed to spectators so that the audience can see a gamer's emotions and reactions. That lighting should never interfere with the gamer's efforts, however — in fact, lighting that reduces issues such as screen glare can even help **curb gaming burnout and eye strain.**

RISK MITIGATION/SECURITY/COMPLIANCE — In an office environment, most users of an AV system are working on company-issued devices and following specific protocols. Gaming venues see users operating a broad variety of "bring-your-own-devices" (BYOD) from a transient population — from students to campus visitors in a collegiate setup, for example. Piracy prevention is a concern here as well.

LABS

These are smaller spaces with individual stations with a small number of spectators, if any. Audio and video functionality need not be terribly complicated in this application. Unlike larger spaces, these venues generally don't need accommodations for moderators or spectators.

Environmental Needs

- A space that can accommodate 3-10 players
- No need for moderator accommodations
- Simplified system designs that have limited sources and displays (Note: Although these spaces are smaller in scale, they'll require many of the same considerations as larger venues when it comes to the technology in use.)

The Experience to Strive For

For Gamers

- Fast signal processing of USB-based peripherals for quick human reaction times during the game; real-time video interaction
- Personal station customizations (user-preferred joysticks or keyboards, for example)
- User-adjusted lighting, volume, and other elements at each station

TRAINING VENUES

These are larger venues that can accommodate any number of players at individual stations with limited capacity for spectator involvement. Enhanced audio-visual solutions are required here to display the games to larger screens, but the bulk of the technology is scaled up from smaller labs.

Environmental Needs

- Accommodations for 10-30 players
- Larger venue to handle increased stations and aspects of public viewing
- Passive viewing options for spectators for viewing on public displays (with content chosen by the moderator)
- Accommodations for a moderator to route and control content for spectators

The Experience to Strive For

For Gamers

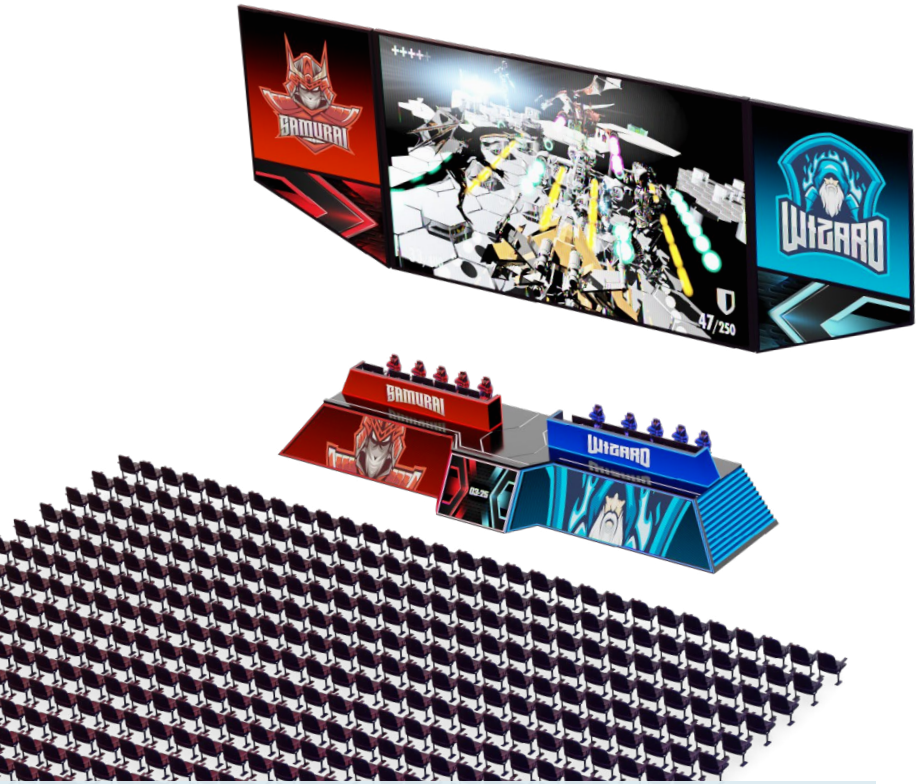
- All experiences mentioned in Labs, plus multi-player intercommunication via headsets and chat applications

For Moderators

- Source switching from gamer to public display (inclusive of audio)
- Station monitoring for uptimes
- Ambiance control, including lighting, sound, HVAC
- Ability to stream content out as needed for viewing consumption through a cloud-based video repository

For Spectators

- Individual control to select featured gamers for viewing (in addition to public displays)



COMPETITION VENUES

Large, arena-like event venues hosting any number of players at individual stations fit this category, with the capacity to host hundreds if not thousands of spectators. Very advanced AV is required to route gaming content locally to the gaming stations as well as to advanced video screens and/or walls for the spectators.

Environmental Needs

- Accommodations for any number of players for advanced competition
- Seating for thousands of spectators in defined areas
- Technology that's significantly scaled up to deliver an experience similar to a professional sporting event
- Camera integration focused on players (similar to traditional sports where the athlete is prominently shown to an audience)

The Experience to Strive For

For Gamers

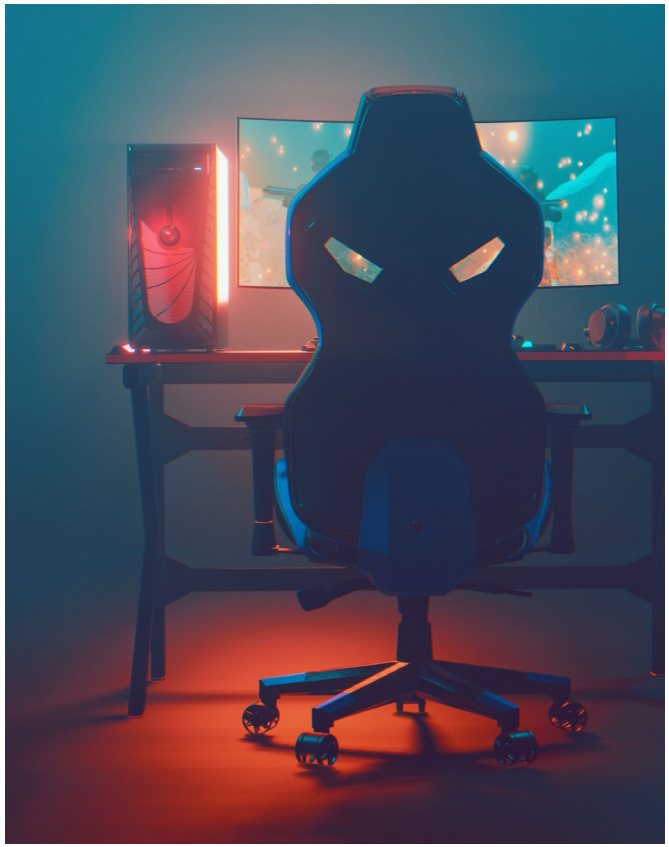
- All experiences mentioned in Labs and Competition venues

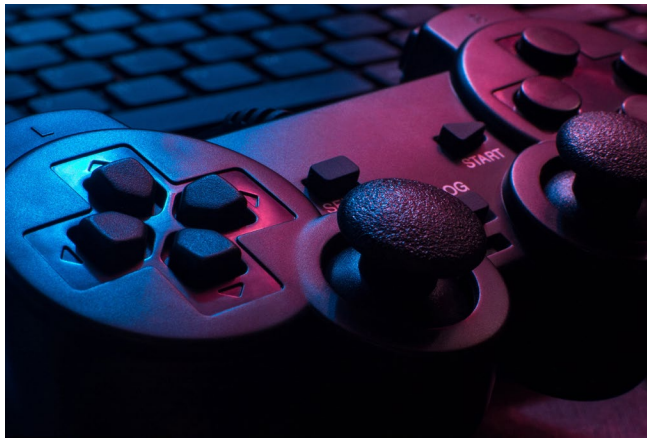
For Moderators

- All experiences mentioned in Labs and Competition venues, plus
- Source routing from station cameras focused on the gamer to be featured with gaming content for viewing (i.e., a "picture-in-picture" experience where one can see the player and the action)
- The ability to stream games from the venue for remote viewing

For Spectators

- All experiences mentioned in Labs and Competition venues

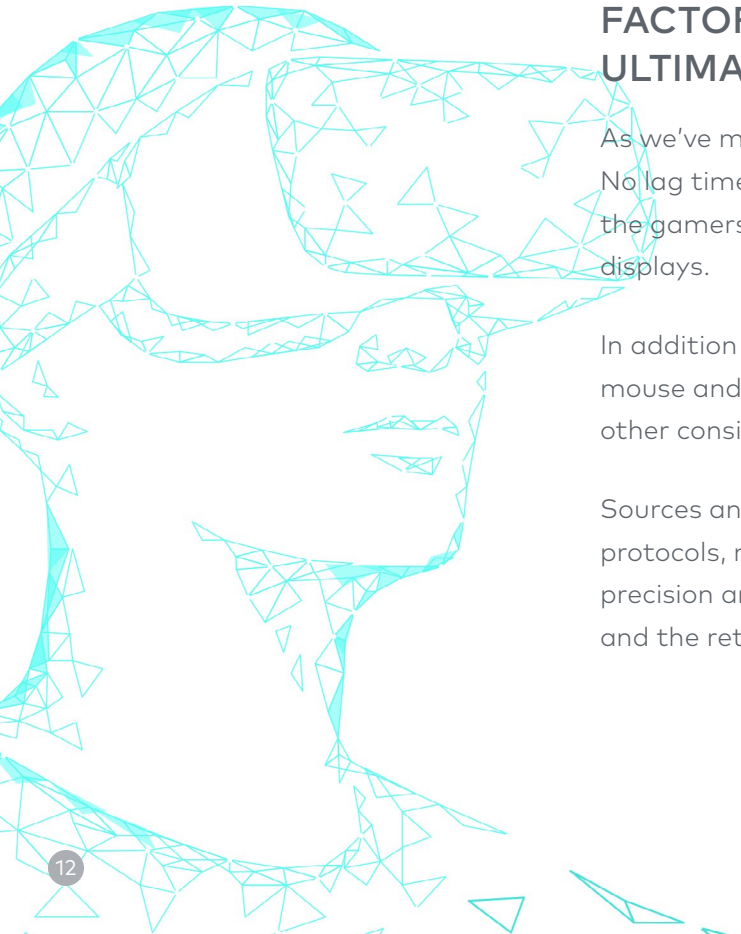




PART THREE ▪ THE DETAILS

Factors driving the ultimate esports experience ▪ Video processing and performance
Intuitive user experience ▪ Audio processing and performance ▪ Security ▪ Management

NEAR ZERO LATENCY VIDEO SIGNALS ARE KEY TO THE EXPERIENCE.

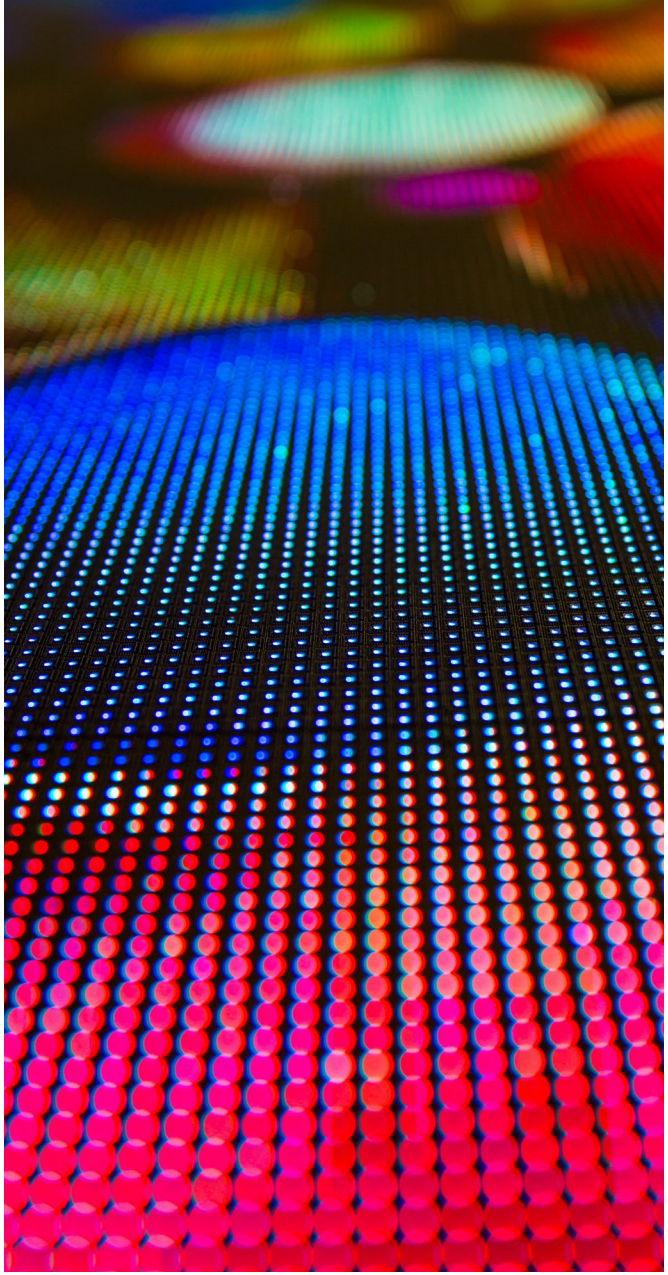


FACTORS DRIVING THE ULTIMATE ESPORTS EXPERIENCE

As we've mentioned, lossless, near zero latency video signals are key to the experience. No lag time — for players or the audience — means lightning-fast reaction times from the gamers and immediate responses from the spectators viewing in real-time on public displays.

In addition to great audio and video, integrating various devices is a priority, such as mouse and keyboard peripherals, headsets, cameras on the gamers themselves, and other considerations.

Sources and peripherals can be either dispersed or centralized. Signals, including USB protocols, must be transmitted over long and short distances bidirectionally with optimal precision and no lag time. Any delays between the commands sent through an interface and the return response will impact the gaming experience negatively.

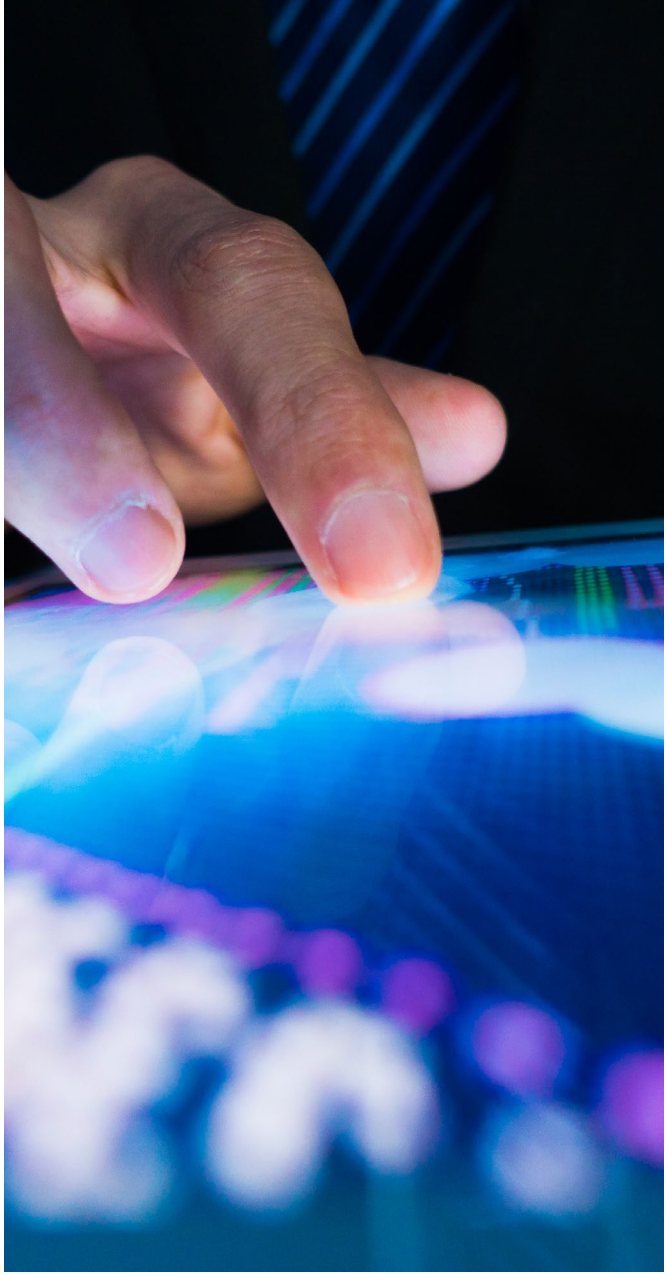


VIDEO PROCESSING AND PERFORMANCE

Clarity is critical for any esports venue. Every detail helps the gamer to make real-time decisions within the game, helps moderators to monitor and control the in-room experience, and makes for a more robust spectacle for the audience. To act decisively, the gamer must be able to see clearly.

Lower resolutions, color loss, ghosting, and lag time need to be addressed and resolved as they will negatively impact the experience. The quality of the video cannot be compromised.

Compatibility becomes paramount as signals can only travel so far with high levels of integrity before loss occurs. Video signals require format switching over various extenders to “push” the signals. Each point of signal conversion is a potential point of delay and failure. This extends to complimentary devices such as displays that are critical to the application’s success.



INTUITIVE USER EXPERIENCE

While enabling technologies deliver the high levels of functionality needed here, intuitive control over the technology is a big piece of the puzzle. Technology is only as good as how it's used, and layering in seamless control for gamers, moderators, and even the spectators is the element that truly brings the ultimate experience to life.

That means controls will be needed for the following:

For Gamers

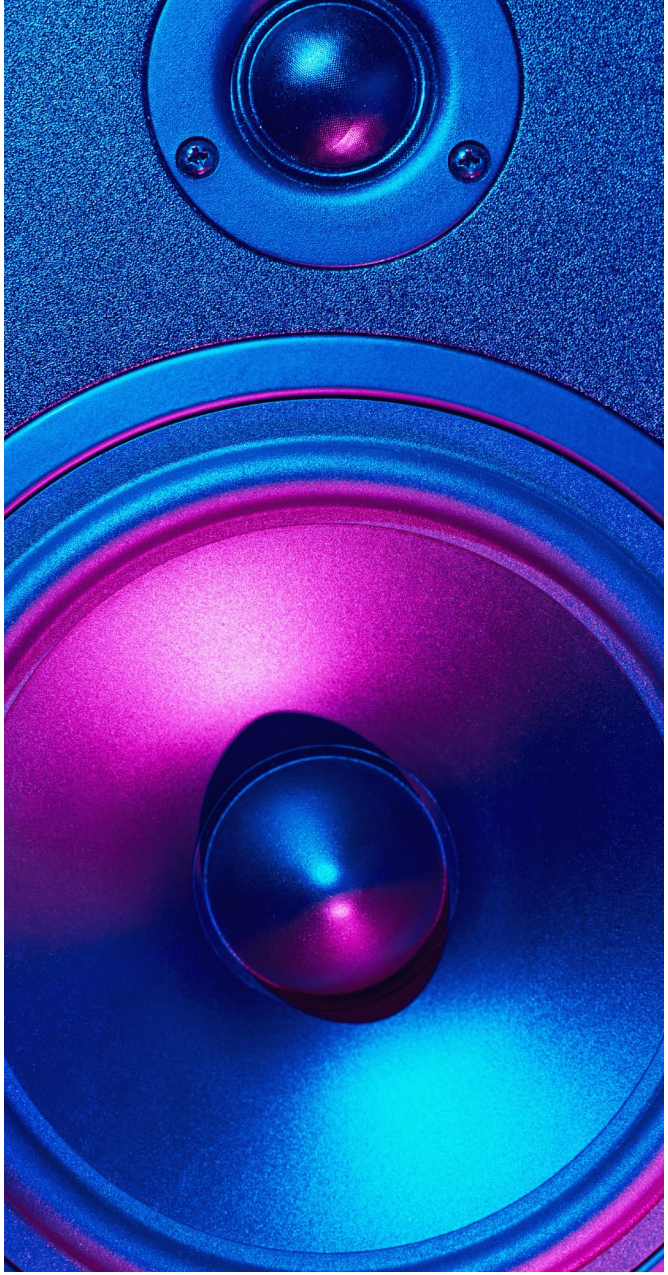
- Source/game selection
- Volume, climate, headset, display, and other adjustments

For Moderators

- Source selection to feed content to main displays (including audio levels)
- Venue climate controls
- Communication monitoring (between gamers and between the gamers and moderator)
- Camera selections on gamers

For Spectators

- Gamer selection for viewing (who does an audience member wish to "follow"?)
- A general high-definition viewing and audio experience for seeing and hearing the gamers — just like at professional sporting events



AUDIO PROCESSING AND PERFORMANCE

Audio clarity is just as important as the video image. The ability to hear everyone and everything in high fidelity makes for both a better gaming and spectator experience.

Speech audio must be intelligible as gamers communicate with each other and the moderator. Audio must capture all the high and low frequencies. Background and ambient noise must be filtered.

Any proper audio solution will need to:

- Silo audio for individual experiences, and group audio to open spaces
- Mix multiple audio sources, such as microphone and content audio
- Separate and individually select audio and video (digital audio is tied to the video signal, so the ability to embed and/or de-embed the audio signal from the video signal is important)
- Include an option to route audio to a recording device

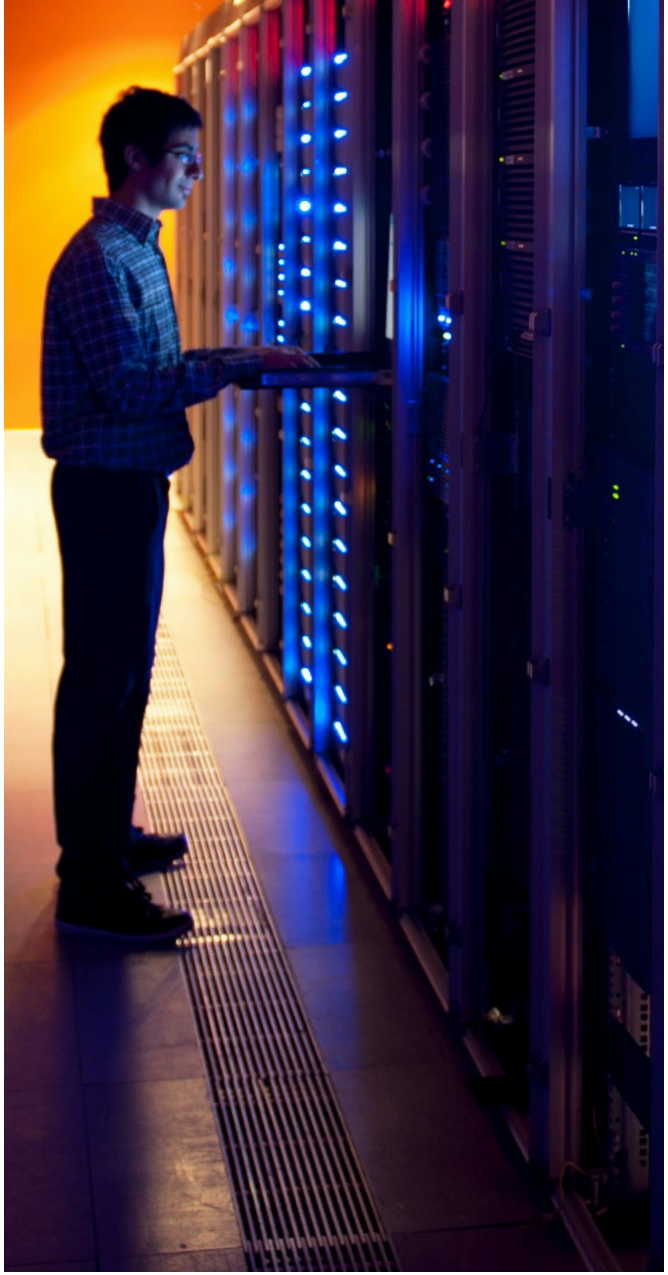
SECURITY

When it comes to security in an esports environment, the key components that need to be addressed are content encryption, device access and user access. Part of the experience for the esports venue is to protect the games from piracy. While the games themselves are protected, the distribution platform must be able to support the most aggressive compliance and risk mitigation standards that are layered on top of the "stock" protection the game carries with it.

Any high-demand video application should leverage all the latest enterprise-grade security protocols, such as 802.1x and TPPS, and will remotely update security patches as they become available. Higher degrees of certifications — even military grade certifications —should be carefully identified for another layer of confidence. JITC, NIAP, or FIPS certifications protect network infrastructure, the protected gaming content, and all connected devices and the data they hold.

A robust security package should provide:

- Control over the application and environment that drives the experience
- The ability to select specific games/stations to be displayed on a public screen or video wall
- The ability to adjust environmental settings like audio levels, lighting, and camera feeds
- The ability for a moderator to monitor the gamers themselves for proper behavior (e.g., listening in on chats)



MANAGEMENT

The larger a venue becomes, the greater the need to be able to manage, monitor, and troubleshoot the system. The right management tool — especially one that has the ability to fix issues remotely, is an incredibly powerful asset.

A proper management system should provide the ability to:

- Deploy, manage, monitor, and troubleshoot platforms remotely
- Expand the system and add new endpoints efficiently
- Update firmware or software when you want (and when going onsite is not possible or safe)
- View system health and to get conditional alerts (empowering you to address potential issues before an emergency or during a critical operation, as maximizing system uptime is paramount)
- Manage each asset on the platform
- Provide notifications with regard to license statuses and device life cycles

PART FOUR ▪ TECH YOU KNOW

When you scrutinize the landscape, you'll uncover that esports applications also share many similarities with today's more common collaborative applications like hybrid meeting spaces, classrooms, and digital signage. While the scale is different and the intended experiences vary, the functionality is nearly the same regardless of size — or name.

Esports Lab

Huddle Space

LABS

These venues are very similar to huddle spaces.

Needs for these similar spaces include:

- USB integration for peripherals
- Point to point source interaction
- Commitment to supporting security standards
- Ability to scale


Esports Training Venue


Conference Room


Classroom

TRAINING VENUES

These spaces are similar to hybrid workspaces and standard conference rooms in corporate settings, and much like classrooms in schools and universities. They could potentially scale up to include technology shared by courtroom, executive conference room, or lecture hall/training room applications. Larger venues also have commonalities with military installations.

Needs for these similar spaces include

- **Everything mentioned in Labs, plus -**
- Integration with conferencing solutions
- Streamlined and affordable control for a unified UX
- Single and multi-display output support
- Interoperability with peripherals such as cameras, MNK (keyboard/mouse), etc.

Esports Competition Venue

Simulation Center

Command and Control

COMPETITION VENUES

These spaces share many of the same attributes as simulation centers, command and control centers, and emergency operations spaces.

Needs for these similar spaces include

- **Everything mentioned in Labs and Training Venues, plus -**
- Multi-source and user routing
- Audio routing (embedding, de-embedding)
- Ultra-high image integrity up to 4K60 4:4:4
- 240hz refresh rates
- Support for enterprise grade security
- Advanced control functionality
- Audio amplification

From the smallest huddle rooms to the largest esports venues imaginable, Crestron technology can provide solutions for an incredibly broad array of applications. Crestron's networked content distribution product **DM NVX®** AV over IP, control (**VC-4**), and technology management solution **XiO Cloud®** platform can all deliver the critical pieces needed to create a best-in-class esports experience.

FOR MORE INFORMATION

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