STADIUM
TECH REPORT

Stadium Connectivity White Paper

Results & Analysis

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Presented by Stadium Tech Report & **verizon**

THE THING NOBODY PLANNED FOR

If there's one thing that all venue information technology operations have in common, it's that their technology strategies and deployments typically follow long arcs. Any big investment like a wireless network upgrade is something considered along 5- or 10-year timeframes, with depreciation cycles built into the big budgets necessary to make venue-sized connectivity happen. There are very few sudden moves made, with incremental changes more commonplace, especially in areas that might force a shift in historical fan and operational behavior, like ticketing and concessions.

And then, 2020 happened.

All that careful planning, all those slow-go pilot projects, all those long-term visions, all went out the window with the arrival of the Covid-19 pandemic. Did anyone have in their planning ledgers a zero-revenue budget for the year? Or the need for a sudden influx of safety-related spending and procedural changes that would be necessary to try to bring things somewhat back to normal when fans were allowed in stadiums again?

We all know the answer to those questions.

KEY TAKEAWAYS
1. Current venue connectivity is solid, with Wi-Fi and 4G LTE prevalent everywhere
2. Covid-19 accelerated the process of adding technology to solve new issues
3. Technology is being asked to solve for opex, more revenue opportunities and a better fan experience
4. New touchpoints call for increased security across all operations
5. Many venues are still seeking information and direction for their technology journey

But what we don't know, or didn't know, was exactly how the large public venue technology teams would cope with both the Covid-related shutdowns and then the return of fans to stadiums and arenas. In our mind, those conditions made it the perfect time to ask the industry participants themselves to assess where they have been and where they are going from a stadium connectivity point of view. So in July and August of this year we reached out to the Stadium Tech Report audience and asked them to participate in our inaugural Stadium Connectivity Outlook survey, which asked a wide range of questions about the current state of a venue's connectivity, and where the venues, teams and schools would prioritize investments and strategies as the sporting world moved back to full arenas in a world that had radically changed almost overnight.

These are not just our words but the insights of our audience - more than 100 respondents spent their time providing answers - honest feedback that we hope will provide an industry-wide perspective on the common issues facing venues of all shapes and sizes, from large NFL and college football stadiums to small concert halls. What emerged was a snapshot of where we're at as an industry, and where we're going as we build on solid basic connectivity as a core and use that to move forward in an uncertain direction but one still with concrete goals: A better, safer fan experience with more control on operations and the bottom line.

Taken as a whole the results also show that venue technology teams put a great amount of importance on their strategic planning and the "map" of their digital journey. Especially in a time

when Covid-19 and other factors have placed an even greater emphasis on prioritizing budgets and expenditures, venues made it clear that they need to have plans in place before they go out to spend on the projects needed to move them forward. Our respondents also said that having good partners and good advice were key components as they execute on the plans that will help make the return to full stadiums a successful endeavor for everyone involved.

Challenges: Covid-19 top of mind, along with how to pay for re-opening

Following the successful introduction of Covid-19 vaccines, in early 2021 the decline in the worldwide number of infections gave hope that there would be a return to some kind of "normalcy" in the live events world, with fans allowed back in venues. Indeed, the summer saw most restrictions on number of guests allowed and other health procedures like mask-wearing lifted from most big venues.

RESPONDENT PROFILES
More than 46 percent of respondents had titles of CEO, CIO or director of IT.

However, a resurgence of new Covid-19 cases, fueled mainly by the rise of the more-virulent Delta variant taking advantage of areas of lower numbers of vaccinations, showed that our respondents were correct in keeping the pandemic at the top of their 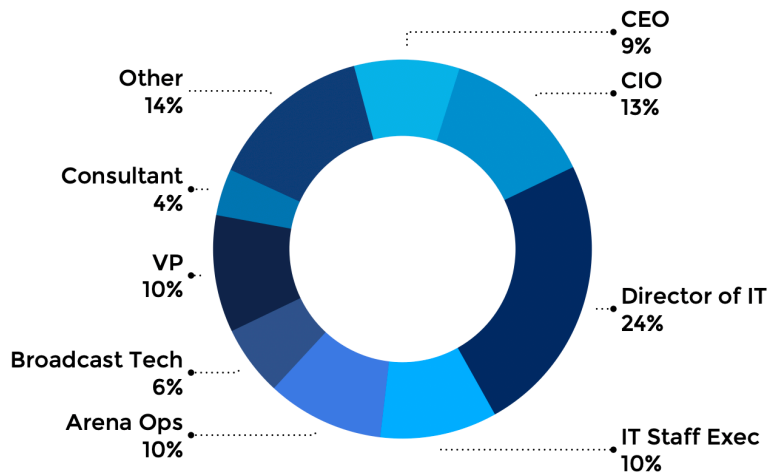concerns. Responses to our question about what venues saw as the greatest challenges ahead put the reemergence of Covid-19 at the top of the list, followed closely by how venues would satisfy all the mechanics of being able to open and safely host guests -- and also how they would do so in a time of budget constraints, due to the lack of revenues that the Covid-19 shutdowns of the year before had caused.

Covid-19 concerns also informed the answers to a question about what technologies venues saw as most effective at removing customer pain points. Accelerated physical access to venues, mainly through enhanced digital ticketing or even ticketless solutions, topped the list of responses, followed by touchless payment processes and other concessions-based programs like express pickup ordering or in-seat delivery.

From this question and several others, it's clear that being able to support as much social distancing as possible was a lesson learned through limited openings and fan feedback, since all the top-mentioned processes are aimed at reducing lines and fan congestion inside venues as venues return to full capacity.

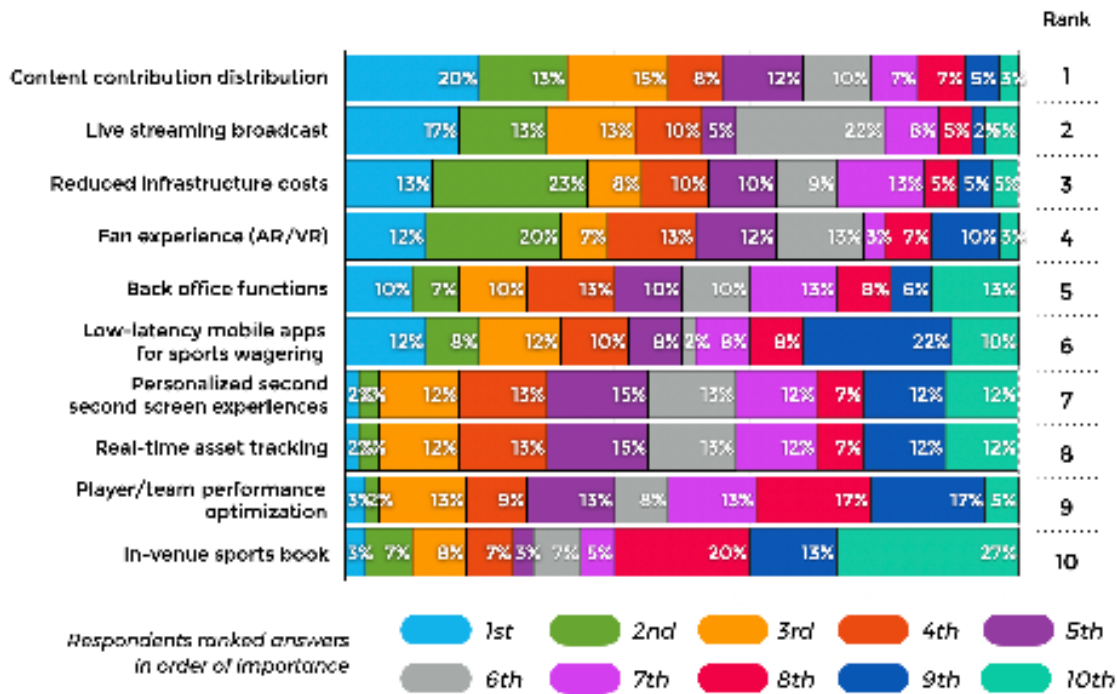## Solid connectivity provides a base for future plans

One thing our survey did reveal in a very loud and clear fashion is that across the board, venues of all shapes and sizes have very good connectivity infrastructures, on both the wireless and wireline fronts. A question about "what is currently deployed" inside venues saw 95 percent-plus answers about 4G LTE cellular and traditional LAN/WAN infrastructure, and a 92 percent answer about whether or not a venue currently had fan-facing Wi-Fi installed.

What aspects of 5G/MEC do you think might have the most impact on your business?

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Rank
Content contribution distribution	20%	13%	15%	8%	12%	10%	7%	7%	5%	3%	1
Live streaming broadcast	17%	13%	13%	10%	5%	22%	8%	5%	2%	5%	2
Reduced infrastructure costs	13%	23%	8%	10%	10%	9%	13%	5%	5%	5%	3
Fan experience (AR/VR)	12%	20%	7%	13%	12%	13%	3%	7%	10%	3%	4
Back office functions	10%	7%	10%	13%	10%	10%	13%	8%	6%	13%	5
Low-latency mobile apps for sports wagering	12%	8%	12%	10%	8%	2%	8%	8%	22%	10%	6
Personalized second second screen experiences	2% 3%	12%	13%	15%	13%	12%	7%	12%	12%		7
Real-time asset tracking	2% 3%	12%	13%	15%	13%	12%	7%	12%	12%		8
Player/team performance optimization	3% 2%	13%	9%	13%	8%	13%	17%	17%	5%		9
In-venue sports book	3% 7%	8%	7% 3%	7% 5%	20%	13%	27%				10

Respondents ranked answers in order of importance

If there is one area where venues and their technology and service partners are in solid agreement, it's that better wireless data and voice capabilities are key factors in assuring a better fan experience. From our research and reporting, we know that if fans are able to stay connected they are more likely to share their good experiences with others. A well-connected fan is also a fan who is more engaged and more likely to spend more on food, drinks and merchandise, especially if the digital process allows those interactions to happen faster and more seamlessly. So it's no surprise that in-venue connectivity is as solid as our respondents reported.

More than 80 percent of respondents said they had virtual networks installed, with the same number claiming a cellular distributed antenna system (DAS) inside their building. If there was a surprise among the answers it was the almost 60-percent total of venues who said they had 5G cellular services inside their buildings -- a testament to the big U.S. carriers' efforts to get their 5G services in as many places as possible. With their captive audiences and on-site demands for high bandwidth with low latency, 5G services are well suited for large public venues for both carriers and customers.

According to our survey, venues also see 5G and mobile-edge computing (MEC) as technologies that

may be able to help them in the search for new revenues and business opportunities. In a question that asked about where 5G and MEC might have the most economic impact, respondents listed content distribution, live-broadcast streaming and augmented reality/virtual reality fan experiences as three of the top four answers. Sandwiched in between those answers was a nod toward using 5G and MEC to reduce infrastructure costs, especially the need for more wired infrastructure.

The new trend toward using "network slices" to segregate different operations also found favor among our respondents, with a heavy emphasis on sensitive services. Security and surveillance systems were seen as the top services that might make use of network slices to better protect their transmissions, followed closely by back-of-house services. Content distribution for both live broadcasts as well as venue IPTV networks were also seen as top potential places where network slices could help IT staffs handle traffic more safely and efficiently.

Security a priority as more operations become digital

As more stadium and event operations become digital, especially sensitive ones like security, concessions and other financial or private-information sharing interactions, it's no surprise that greater security is top of mind among our survey respondents. If there's one thing about our core reader audience of top venue IT professionals it's their honesty and lack of desire to sugar-coat problems, a trait that surfaced in their responses to our questions about venue security and connectivity.

"Venues clearly see the need to increase their cybersecurity portfolio and practices, as more sensitive communications become digital in nature."
Mike Ruhnke, Group Vice President, Verizon

When we straight out asked respondents to characterize their current security operations level, a full 85 percent said their security efforts were only "Adequate" (75 percent) or "Not Good Enough" (10 percent). Clearly, these responses show that venues recognize that their current security measures need to be addressed.

But far from ignoring the issue, our respondents also seem ready to embrace security measures head-on. A question about short-term investment priorities saw respondents pick investments in greater overall cybersecurity as the second top answer, trailing only the desire to first reduce operating costs. When asked what their top investment would be to support growth, respondents picked network and web security as the no. 1 choice -- showing that even in times of budgetary constraints, venues seem to be ready to spend to ensure a safe, secure environment for the increased sensitive communications in and around their buildings.

The digital journey is still near the beginning

Taken as a whole, the responses from our audience have produced several overall themes when it comes to the current state of stadium connectivity. Where are we now? According to our respondents, the overall venue ecosystem has a high level of base connectivity, with strong cellular and Wi-Fi networks prevalent in almost every property. But because of the Covid-19 pandemic, the entire industry is also in the midst of somewhat of a full technical reset, as new technologies and new methods of engaging and supporting both guests and business operations must be deployed to re-open venues with the safety our public world now requires.

And those new offerings must be delivered in an unprecedented time of budgetary stress, with many venues trying to rebound after a year of almost zero revenues.

Looking further forward, venues see connectivity technologies as the key to not only remaining competitive by being able to improve all facets of the fan experience, but also to help improve operational expenses and to secure all the new types of digital communications a more-connected and more contact-free environment requires.

Since Covid-19 and its aftereffects have no doubt radically changed many strategies for the near-term, it's perhaps no surprise that more than 25 percent of venues who participated in our survey see themselves as behind their peers in their digital transformation execution. And 57 percent of respondents said they still needed help in turning their digital journey "map" into a design and managed implementation plan.

A smaller number said they would like to get help in understanding new connectivity technologies, like CBRS, private and public 5G services, and MEC - and more guidance on how to use those technologies in their technical stack. What that says to us is that venues know they will need more trusted partners to help them build their business plans for the future, to better understand emerging connectivity technologies and how to leverage those developments to offer more services while also helping to cut costs.

"With new technologies like private 5G services, network slicing and CBRS entering the market, it's understandable that venues need help understanding and deploying those technologies in ways to best help their businesses."

Kevan Akers, SME Connected Venues, Verizon

If our news coverage in Stadium Tech Report has been any guide, many venues are already moving forward on their digital connectivity path, as we have had recent profiles that seem to mirror the priorities spelled out by the survey -- a focus on new entry and concession technologies to speed ingress and egress; a move to converged networks to optimize administration and reduce costs; and exploration of new technologies that could support new business opportunities, which could and should in turn keep fans coming back to venues for experiences they can't get anywhere else.

FOR MORE INFORMATION

Paul Kapustka - Editor in Chief, Stadium Tech Report
E: Paul.Kapustka@stadiumtechreport.com