



# **6 GHz Enterprise Wi-Fi – Powering the next generation sports events**

DSA Global Summit, Dubai

November 17, 2025

# Sports – A major economic factor

The global sports industry's sales totaled \$521 billion in 2024 and are growing at an average rate of 8% per year.

The sports industry, which is lagging other sectors in technology adoption, could increase its annual revenue by 25% if it closes that digital gap.

The industry could increase its annual sales by 25%, or \$130 billion, by accelerating the adoption of technology.

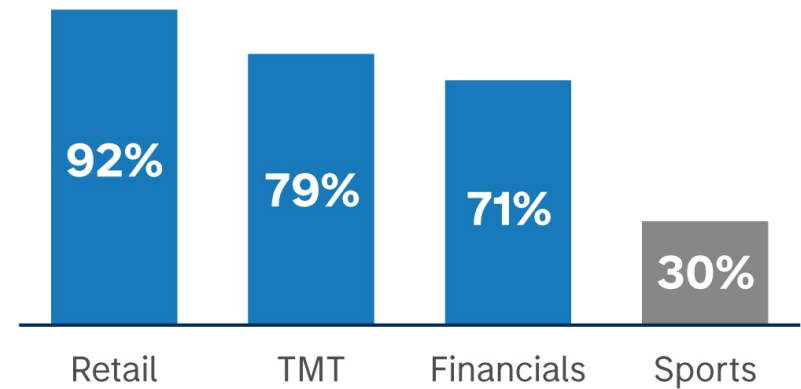
Technology should add or boost revenue streams for sports franchises and their related businesses with several sectors, including media, live events, video games, gambling and internet.

Events sales, which account for nearly half of the industry's total revenue, could rise 21%.

Source: Morgan Stanley



**Companies using technology to personalize marketing**



# Major sports events draw large crowds



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# Major sports events draw large crowds - Examples

## **Large stadiums/arenas can accommodate more than 100,000 spectators**

- Narendra Modi Stadium (India): 132,000
- AT&T Stadium (USA): 108,713
- University of Alabama/Bryant–Denny Stadium (USA): 100,077

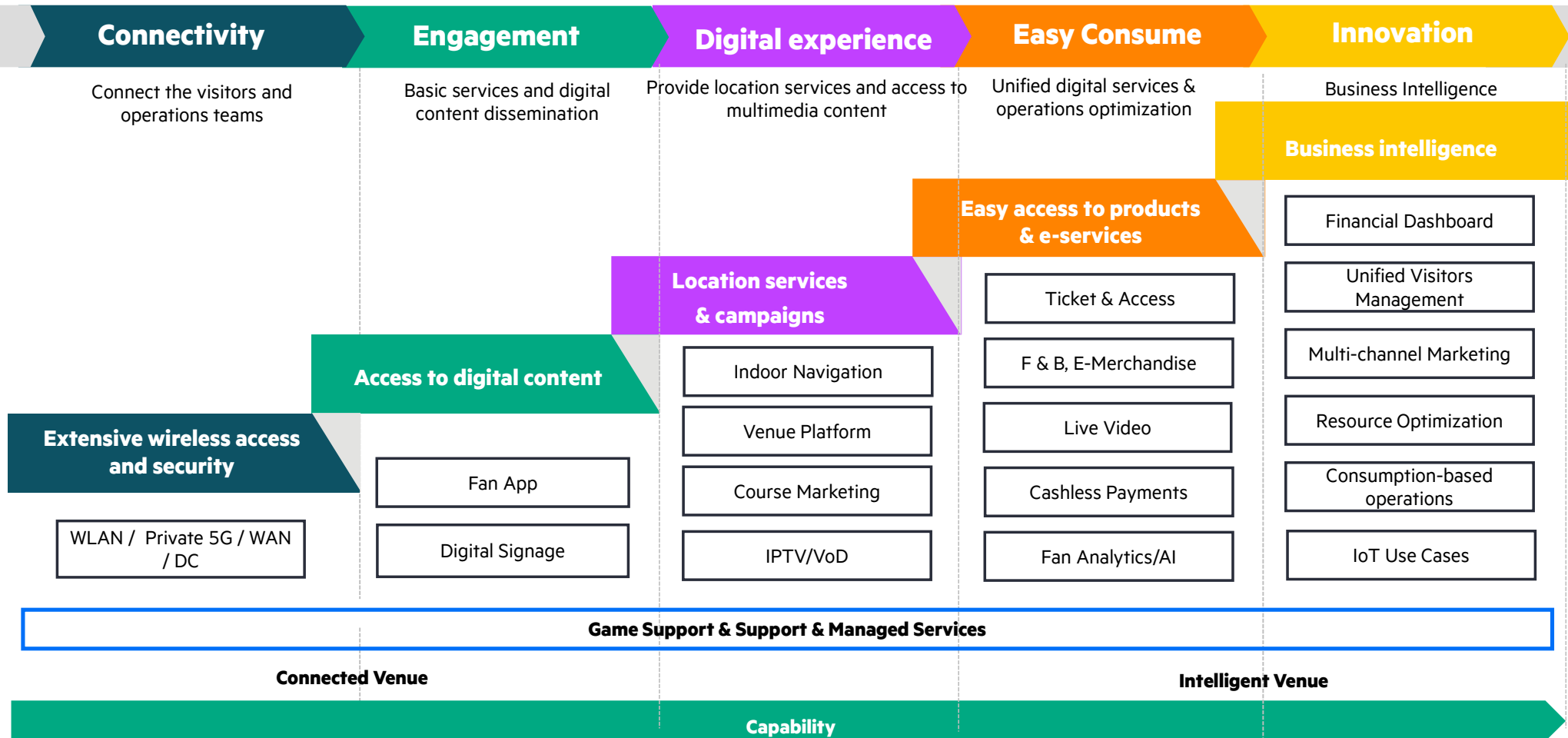
## **Major outdoor events**

- The American college football game played at the Bristol Motor Speedway in Bristol, Tennessee on September 10, 2016, between the University of Tennessee Volunteers and the Virginia Tech Hokies holds the record for NCAA football's largest single-game attendance at 156,990.
- The 2023 Ryder Cup in Rome attracted a record 272,000 spectators, on average 68,000 per day..
- In Feb 2008, 170,802 fans were in attendance at the FBR Open Golf Tournament in Scottsdale, Arizona (U.S. PGA Tour).
- The highest-attended Kentucky Derby came in 2015, when 170,513 people packed Churchill Downs.





# Sports & Entertainment - HPE digital transformation roadmap



# The role of Wi-Fi in Sports: Enhance the fan experience

## **Spectators want to stay connected**

- Conduct “standard” activities like web browsing, posting on social media or sending messages, everywhere, all the time.
- Use event apps that provide real-time statistics and analytics, live betting platforms, multiple camera angles and instant replays streamed directly to fans’ devices, AR enhancements (e.g., player info overlays, interactive replays), schedules, maps, and personalised services.

## **User expectations**

- High availability
- High reliability
- High performance (data rate, responsiveness)

**High-quality connectivity is a differentiating factor for sports venues.**



# The role of Wi-Fi in Sports: More than entertainment

- Venue Operations & Workforce Applications
  - Digital Ticketing & Access
  - Merchandise Ordering
  - Point-of-Sale (POS) Systems
  - Staff Communications
- Crowd Management & Security
- IoT Device Infrastructure
- Access Control & Credentialing
- Media, Broadcast & Team Operations
  - High-Bandwidth Support for Media Teams (ex.: Wi-Fi-connected 4K/8K cameras.)
  - Augmented and Automated Sports Production
  - Team & Coaching Technology
- Hospitality, VIP, and Commercial Services
  - Premium Fan Experiences (ex.: High-bandwidth AR/VR applications in hospitality suites.)
  - Sponsor Activations
  - Venue-as-a-Service Commercial Models



# Why Wi-Fi?

## **Fan Experience:**

*“Fans expect the same connectivity in the stadium as they have at home. It’s no longer a luxury, it’s a necessity.”*  
— Fred Kirsch, VP of Content, New England Patriots (2014)

*“Reliable Wi-Fi is foundational to enhancing the fan experience, from mobile ticketing to instant replays to food ordering.”*  
— Dan Williams, VP of Technology, SoFi Stadium

## **Capacity & Control:**

*“Cellular networks alone cannot provide the capacity or the control we need on match days. Wi-Fi lets us guarantee a quality experience for every fan.”*  
— John Winborn, CIO, Dallas Cowboys (AT&T Stadium)

## **Revenue & Data:**

*“Wi-Fi is not just about connectivity; it enables new revenue streams via digital engagement and provides valuable insights on fan behavior.”*  
— Sanjay Patel, CTO, Levi’s Stadium





# Evolution of Wi-Fi in Sports (ex. football/soccer)

Wi-Fi generation	Wi-Fi 4 (802.11n)	Wi-Fi 5 (802.11ac)	Wi-Fi 6/6E (802.11ax)	Wi-Fi 6E/7 (802.11ax/be)	Wi-Fi 7/8 (802.11be/bn)
Spectrum	2.4 GHz	2.4/5 GHz	2.4/5 GHz	2.4/5/6 GHz	2.4/5/6 GHz
Typical no. of APs	100–300	500–1,500	1,000–2,000	1,500–3,000	1,500–3,000+
No. of Users (peak)	5,000	10–20,000	20–30,000	30,000+	50,000+
Data/Match	~100 GB	1–5 TB	10–30 TB	30–50+ TB	50–80+ TB
Deployment examples	MetLife Stadium	Levis Stadium	Chase Center	Notre Dame Al-Nassr Stadium	
Time	2008–2013	2014–2019	2020–2023	2023–2027	2028+

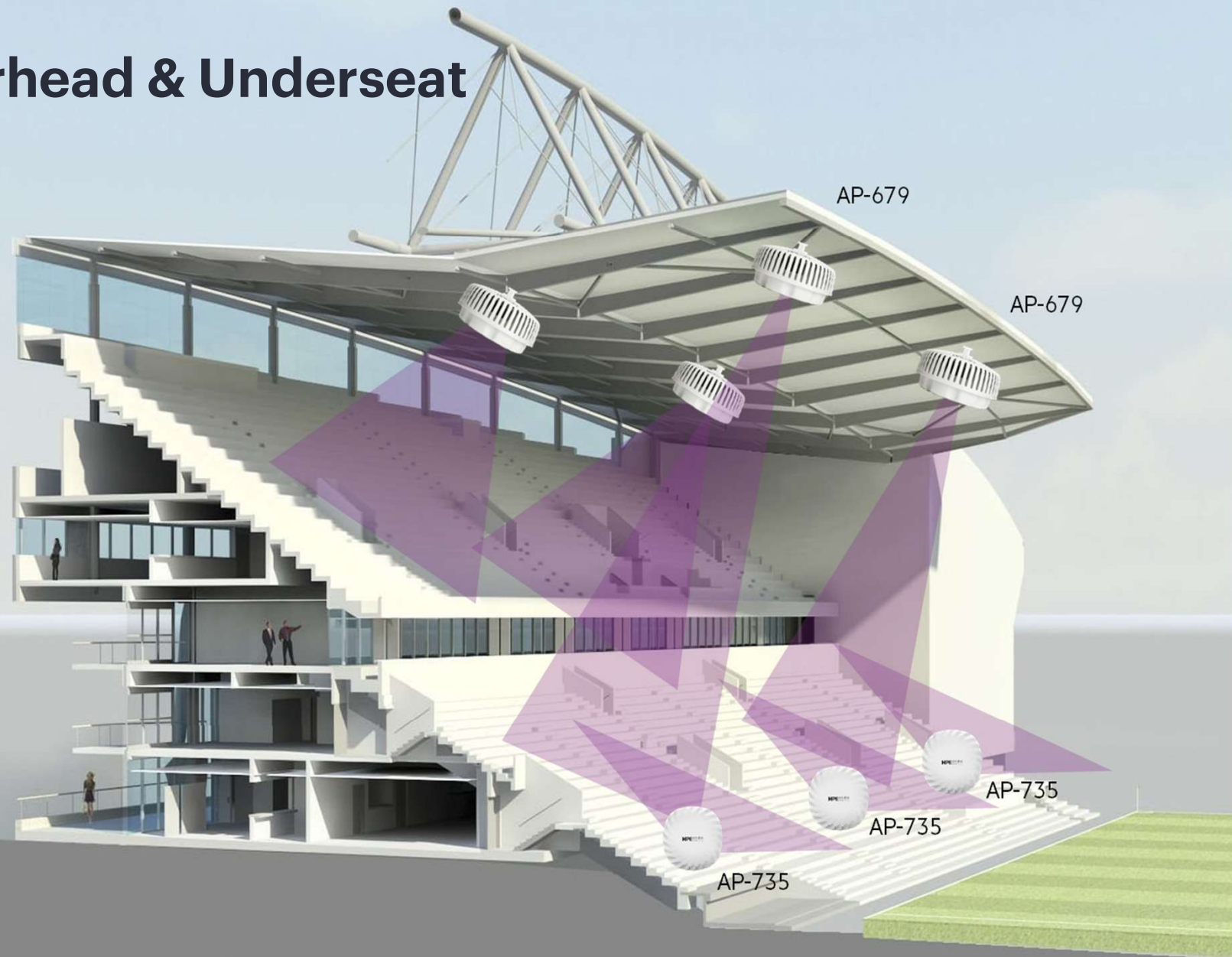


# In the beginning – High-density Wi-Fi at Levi's Stadium

- In 2013, Aruba (now: HPE Networking) built their first high-density large public venue Wi-Fi network, comprised of under-seat access points deployed in the seating sections at Levi's Stadium, home of the San Francisco Forty Niners.
- It's hard to imagine today, but in the early 2010's most cell phones and other hand-held phones and other devices did not include a 5 GHz radio. This made high density deployments challenging because roughly 80% of the clients could only connect to the 2.4 GHz band with only 3 non-overlapping channels available.
- Apple famously started the 5 GHz mobile device push with the iPad 1 but took its time bringing dual band Wi-Fi to iPhone, which included single stream 2.4 and 5 GHz Wi-Fi support in the iPhone5, released Oct 16, 2012. At Levi's we were designing for the future, both by experimenting with putting APs under the fans seats but also betting on a short-term improvement of client device capabilities - primarily the iPhone 5 that included 5 GHz for the first time.
- Levi's Stadium was constructed during 2013 and 2014 using best-effort models and estimates from the Aruba CTO team to deliver the highest possible coverage and capacity using a theoretical approach to reduce co-channel interference, which was under-seat mounting of Wi-Fi access points.



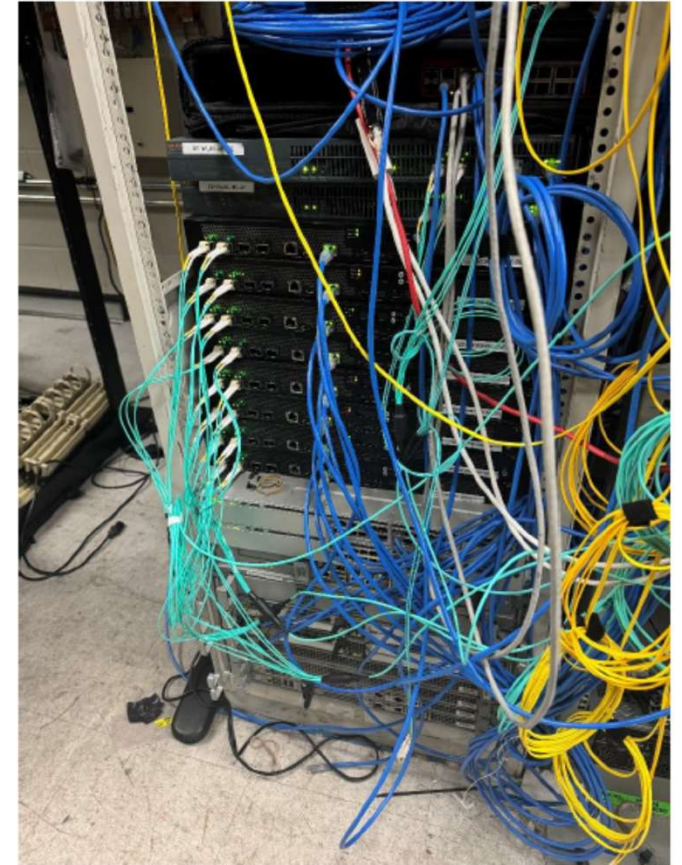
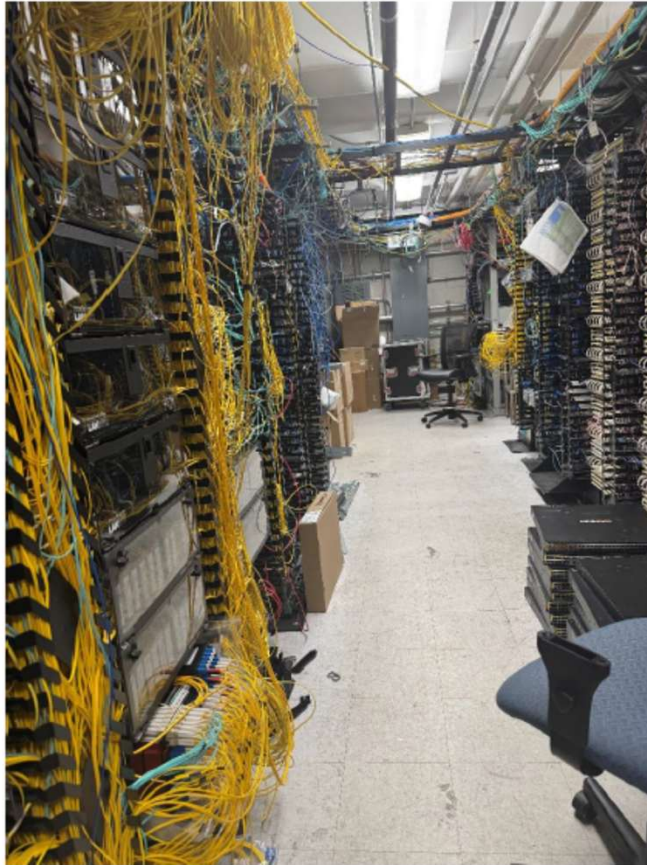
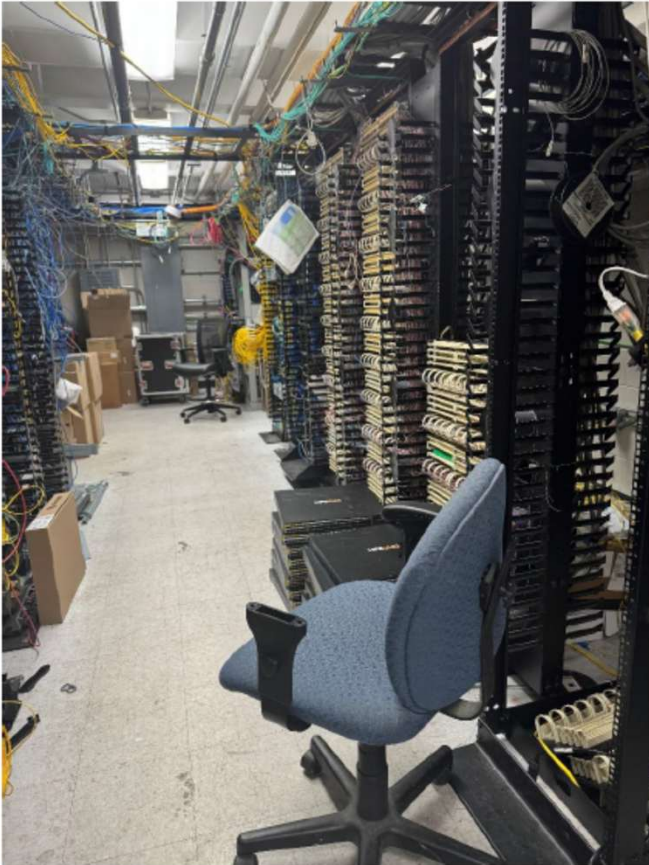
# Supporting Overhead & Underseat





# Wi-Fi in Sports - Infrastructure

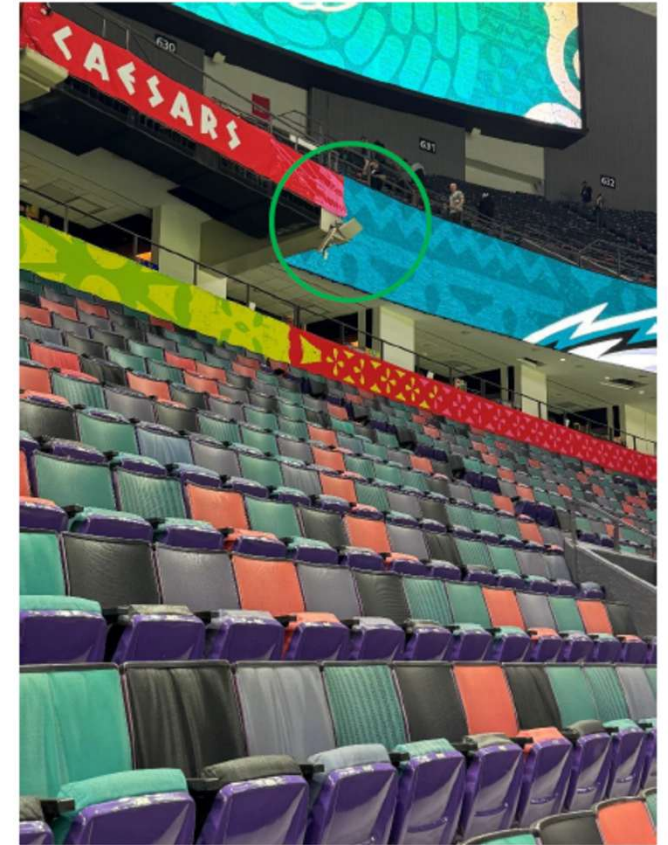
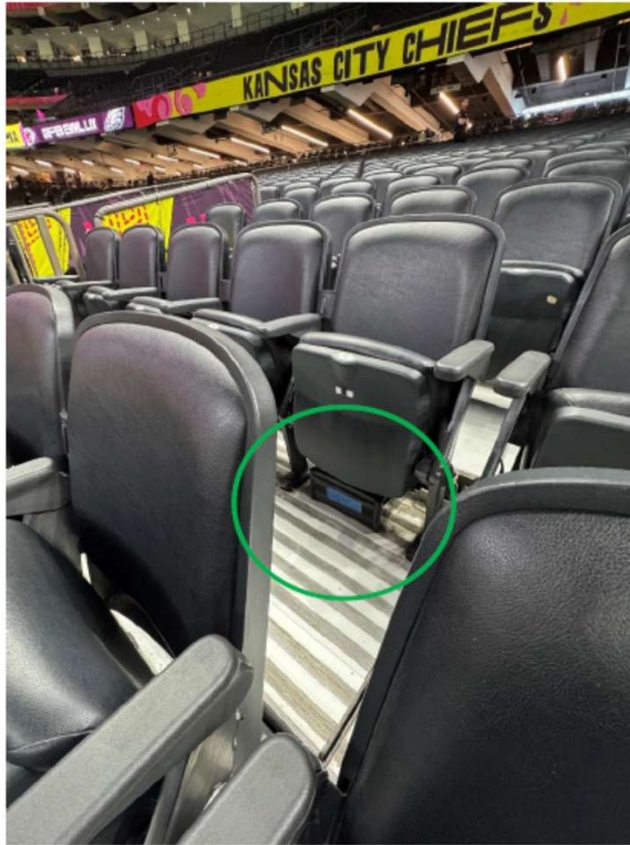
Super Bowl 59: Telecom Control room – HPE Aruba equipment





# Wi-Fi in Sports - Infrastructure

Super Bowl 59: Bowl coverage – underseat + overhead APs



# Wi-Fi in Sports – Some statistics

## **Super Bowl LVIII (2024, Allegiant Stadium, Las Vegas)**

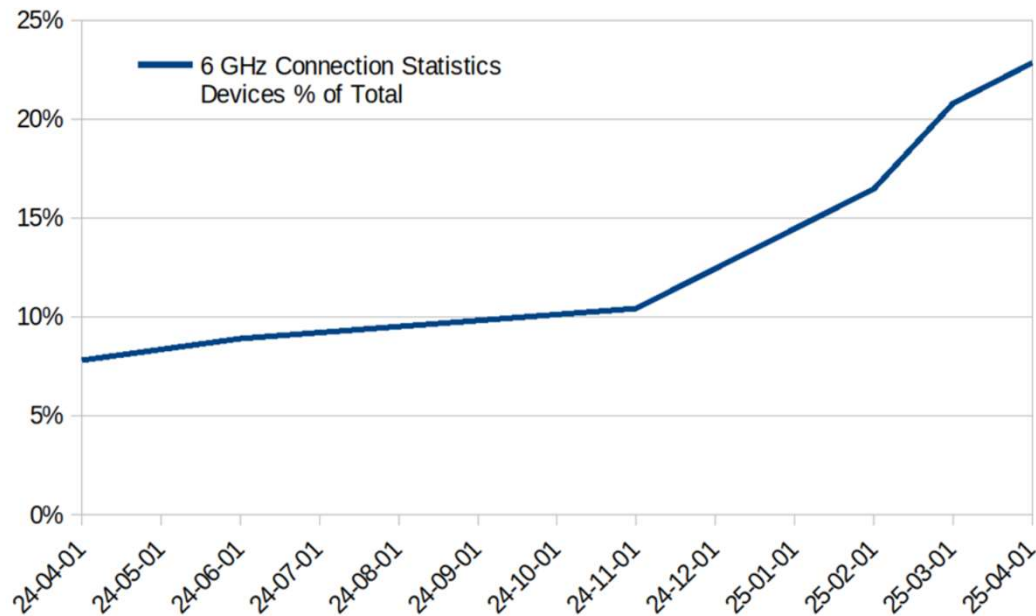
- Total Wi-Fi Data Transferred: 34.8 TB
  - Downlink: ~31 TB
  - Uplink: ~3.8 TB
  - Peak Concurrent Users: 32,000+ devices (~49% of attendees)
- Average Data Per User: ~1.09 GB
- Peak Throughput: Up to 50 Gbps
- AP Deployment: ~1,400 Wi-Fi access points (Extreme Networks)
- Band Usage:
  - 2.4 GHz: <10% of traffic; mainly legacy or IoT devices
  - 5 GHz: ~65% of traffic; primary band for most users
  - 6 GHz: ~25% of traffic; fastest growing segment (Wi-Fi 6E and 7 devices)
- Wi-Fi 6E/7 Capable Devices: Estimated 20% of connected devices



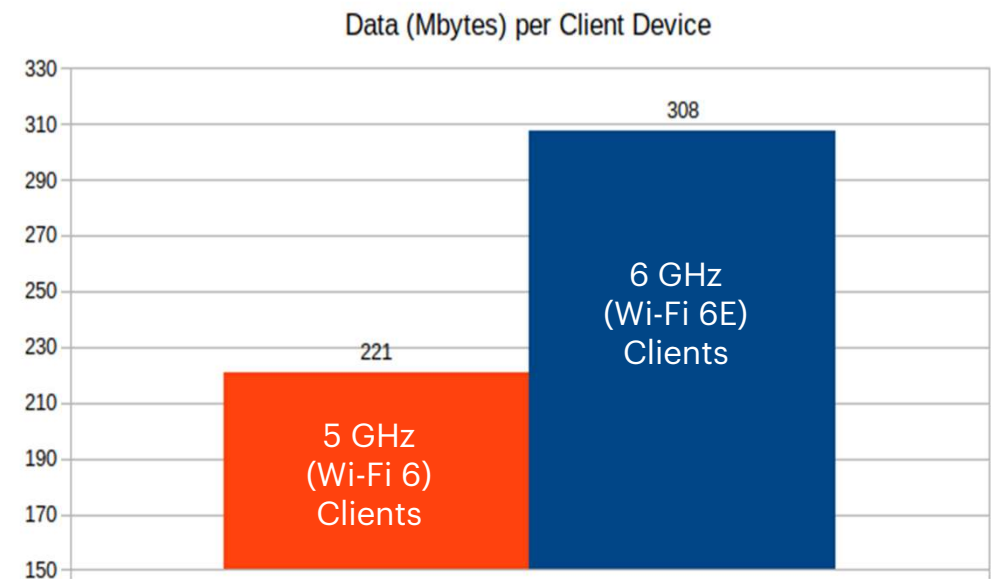


# Wi-Fi in Sports – 6 GHz adoption

No. of Wi-Fi 6E Connected Client Devices  
tripled within one year (2024)



39% more data per client on 6 GHz Wi-Fi 6E  
(12-months average)



Chase Center, San Francisco (Source: HPE)

**By now, the 6 GHz share of overall traffic is exceeding 40% in some venues**



# The Future ... has already arrived

## LA Rams debut augmented reality experience at SoFi Stadium

Posted 9 December 2022



Source: <https://sambadigital.com/la-rams-debut-augmented-reality-experience-at-sofi-stadium/>



# The Future ... has already arrived

## Operator Perspective on AR/VR and Wi-Fi

*"We're preparing for a future where every fan can have a personalized, immersive experience. AR and VR will redefine what it means to attend a live event, and only next-generation Wi-Fi can make that possible."*  
— Michelle McKenna, former CIO, NFL

*"The 6 GHz band is game-changing for us. It's the only way we'll be able to support thousands of fans using AR glasses and real-time video at once."*  
— John Winborn, CIO, Dallas Cowboys

- Advancing Wi-Fi technology makes AR/VR glasses smaller, lighter, and more performant
- The rise of AR/VR and immersive experiences will multiply bandwidth and latency demands, making Wi-Fi 6E/7/8 and use of the entire 6 GHz band absolutely essential for future stadium operations.



# Wi-Fi in Sports – State of the Art

## Al-Nassr FC's Wi-Fi 7 Stadium



### **Al-Nassr Club Company's mobile-first campus boosts fan engagement and global reach**

Al-Nassr Club Company is at the forefront of Saudi Arabia's footballing ambitions. It wants to transform the way fans engage with the club. By building a smart sports campus, the club is streamlining operations, maximizing opportunities for content generation, and simplifying the deployment of game-changing IoT.





# Wi-Fi 7 at Al-Nassr FC

*“Al-Nassr created \$680m in brand visibility in 2023, making it the seventh biggest football club in the world. We want to capitalize on that exposure. We’re working hard on fan engagement and data commercialization.”*

*“This is now a cable-less environment. It is entirely Wi-Fi 7. We didn’t want wireless to be a secondary mode of connectivity. If it is the primary mode, it has to be Wi-Fi 7.”*

— Faisal Khan, Director of IT, Al-Nassr FC

- Everything is now wireless, from media cameras to the sensors carrying players’ biometrics.
- All food and beverage outlets are connected to the network, and all administrative staff enjoy complete workplace mobility.
- Fans can stream content on their smartphones within the stadium.
- Al-Nassr FC manages connectivity into 20 buildings, including warehousing and retail outlets. The Wi-Fi 7 network allows Al-Nassr to quickly bring new connectivity to new parts of the campus.
- In future, Al-Nassr will use high-capacity Wi-Fi networks to enable fans to choose a specific viewpoint in the stadium and then watch the match through video streams live from that location, which could be pitch-side or even from the viewpoint of the referee. For clubs with a major international following, this kind of immersive experience can help to build a deep engagement with the millions of fans who are unable to get to the stadium in-person.



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