# 5G Edge Partner Program

## YBVR - Making us rethink what immersive Virtual Reality experiences could be

**Major sports leagues are trying to figure out how to engage and attract younger fans. The leagues have an average fan age of over 40 with the average fan age for the NBA, NFL and MLB at 42, 50, and 57, respectively. The various leagues and teams are looking to technology not only to gain and retain fans but also to get fans into the stadium rather than watching games at home or on the go.**

In order to deliver new and enhanced experiences that drive fan engagement and entertainment, not only are advanced infrastructures like 5G needed, but also a new set of applications to deliver those experiences on. [1]

### Enter YBVR

YBVR is focused on powering the next generation of immersive video experiences.

Their technology brings live event emotions closer to fans at home or on the move through a personalized, immersive and interactive experience, making you feel you are there from anywhere.

YBVR provides live, immersive streaming of XR video in real-time with premium user experiences across devices, all of which are critical for in-venue enhanced experiences and entertainment.

### A turnkey solution for immersive streaming

**Superior quality:**

➔ Extreme resolution: Up to 12Kx12Kx60fps VOD and 8K60FPS Live
➔ CDN efficiency: Compatible with major CDNs, synergy across devices



**Flexible interactivity and stats:**

➔ Multi-camera: combine and time-sync all types of video sources (regular and immersive) in a seamless experience
➔ Multi-audio: allow each camera feed to have its own audio track
➔ Instant Camera Change: change cameras with zero buffering
➔ Dynamic graphics: enrich the VR experience with external graphics
➔ Shared experiences: Enjoy an experience socially with friends

**Managed experience:**

➔ eXperience Management System through the XMS, control operation, analysis, and monetization
➔ Ingest module: Facilitate content ingestion for Live and On-Demand
➔ Analytics module: Collect and analyze user experience telemetry
➔ Virtual Ticket: Allow content protection and monetization
➔ Geo-aware: Allow distinct experiences for different world regions

**Real-time mode:**

➔ Special mode for use cases sensitive to latency
➔ Under 1 second glass to glass latency
➔ Keep all benefits of "Flexible Interactivity": multi-camera, instant camera change, multi-audio and dynamic graphics

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## Key benefits

**YBVR delivers the next level of fan and guest engagement with new, video-centric, immersive use cases with unparalleled interactivity.**

**Virtual Tickets:** Open your venue to digital audiences. The YBVR solution includes monetization of virtual tickets to enlarge the stadium on demand. Fans can teleport to the match, the concert, or a variety of other events, at the front row, the best place for every fan.

**New camera perspectives:** Allow fan and guest-controlled viewing angles from numerous cameras and enable a highly customizable viewing experience.

**Multi-video support:** Any combination of videos of various types - immersive 360º, 180º or regular "flat" video, 2D or 3D to support differentiated experiences.

**Immersive UX:** Delivered through personalized multi-viewing (Director's Chair) across devices, instant camera change, immersive replays (putting the "fan-in-control") and enriched stats experience.

**Fan in control:** Fans become their own director and can choose what, when, and how to watch live actions. Users can go backward and rewatch the outstanding plays.

**Multi-device:** YBVR supports both VR HMDs to provide the best immersion for VR streaming, and mobile devices to ensure everyone can enjoy immersive and interactive experiences. All with a single platform.

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## Maximize your engagement

**Monetize the experience:** With YBVR's Virtual Ticket feature, you can enlarge your venue or make it accessible even in social distancing conditions. You can break the barriers of time and distance offering digital tickets for digital experiences.

**Fan is the real king:** Empower the fan offering an immersive, interactive, and enriched experience. YBVR's Instant Camera Change and Control Room technology give the fun full control of the experience.

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**Industry insight:** The importance Of 5G, MEC, & XR

5G and MEC play key roles in enabling many of the most immersive and interactive experiences within venues and they serve as key testbeds and showcases of these enabling technologies.

For most fans in the current market, in-stadium connectivity is primarily used to support growing data demands for content viewing and sharing that are core to attendees' digital lifestyles. Next-generation services and content, however, will rely on 5G in conjunction with other enabling technologies, such as MEC/edge computing and AI/Machine Learning.

MEC serves a critical role in enabling some of the most immersive experiences and content that will support premium services. Moving compute to the edge and leveraging 5G also reduces demands on the public network by limiting network travel, which improves the experience of other attendees who have access to less congested data pipes. This is critical as the volume of data consumed within these public venues continues to grow annually, even events that were pandemic-limited have seen increasing data demands.[2]

**Verizon insight**

Multi-access edge computing (MEC) brings technology resources closer to the end user. Data is processed and stored at the network's edge, not at some distant data center, significantly reducing latency. MEC provides both an IT service environment and cloud computing capabilities to help enable the real time enterprise.

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## Case study - YBVR, Verizon & AWS

Companies such as YBVR are already testing their edge solutions in AWS Wavelength zones at the edge of Verizon's 5G network in multiple locations.

Mobile edge computing moves the data and processing done by the applications and services we use closer to the end user at the edge of the network. This shortens the roundtrip data needs to travel, reducing lag time, or latency.

By moving AWS compute and storage services to the edge of Verizon's 5G Ultra Wideband network, innovators can develop applications with ultra-low latencies that will support next generation use cases ranging from self-driving cars to autonomous industrial equipment. Customers are already testing their edge solutions in AWS Wavelength zones at the edge of Verizon's 5G network in multiple locations.

YBVR is building a next-generation VR video platform and is testing how they can utilize 5G and Wavelength to stream live 8K Ultra HD (UHD) video to sports fans and concert goers, allowing simultaneous users to choose various camera views with ultra-low latency.

"Leveraging the powerful combination of Verizon 5G and AWS Wavelength will enable us to put the 'fan in control'," said Sebastian Amengual, YBVR co-founder and Chief Technology Officer. "With 5G and MEC, fans should be able to enjoy 8K live streams on mobile and XR devices in real-time and have their own, personalized watching experience which was not feasible before."

"Watching businesses build transformational applications on the world's first 5G mobile edge computing platform with AWS Wavelength shows how our 5G Ultra Wideband network matters to customers TODAY and is already impacting how businesses operate and consumers live, work and play," said Tami Erwin, CEO of Verizon Business. "When it comes to innovating on 5G and MEC, we're only scratching the surface." (3)

> Verizon's 5G Ultra Wideband network will enable throughput at least 10 times faster than 4G; deliver ultra-low latency and offer very high bandwidth.



**Featured deployments** (4)



## Deployment options

**The YBVR application can run on Verizon 5G mobile phones by:**

Apple, Samsung, Google, Motorola, OnePlus, Nokia, TCL & Kyocera

**The YBVR application can also run on wearable VR/AR headsets by:**

Oculus Quest, Pico, Nreal AR glasses and others

**Deliver the 5G experience to wearable peripherals by leveraging:**

Verizon 5G mobile hotspots

Verizon 5G Fixed Wireless Access

**For the highest level of network and application performance, consider deploying on Verizon 5G Edge and Private Wireless**(7) (8) (9)

Public MEC with AWS

Private MEC with Azure

Private 5G

## About The 5G Edge Partner Program

Verizon was the first in the world to launch 5G mobility service for customers in 2019 and continues to work with key partners to lead the development of the 5G ecosystem. (9)

The 5G Edge Partner Program is part of this work and it aims to accelerate 5G Edge adoption and development by partnering with best-in-class, cross-industry, application providers and developers who will change how we live, work and play.



## Why YBVR and Verizon

The power of Verizon's 5G network, combined with our Edge infrastructure and YBVR's immersive applications delivers a bundled solution that's secure, scaleable and easy to deploy and consume.

Together, we deliver tangible value across video-centric use cases and whether you deploy over public or private 5G, on mobile phones or tablets, or on selected wearables, it's all available on a single Verizon bill and contract.



## Why Verizon

**Superior coverage:** Our 4G LTE network covers 327 million people. That's over 99% of the U.S. population.

**5G innovation:** Verizon 5G Ultra Wideband is the fastest 5G in the world, with ultra-low lag and massive capacity.(6)

**Trusted security:** Managing over 500,000 security network and hosting devices gives us valuable insights into the digital landscape.

**Massive capacity:** We obsess over the details, analyzing millions of gigabytes of data every day.

**Easy integration**: We've certified 900+ machine-to-machine (M2M) chipsets, modules and devices.
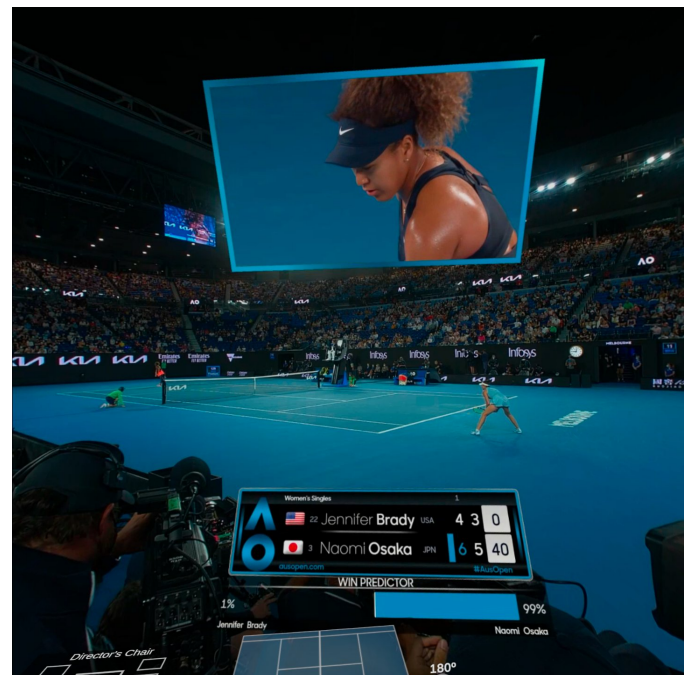
## Tools

[Verizon 5G Edge Developer Portal](#)

[Verizon Open Source](#)

## Learn more

To find out more about how YBVR and the Verizon 5G Edge Network could help you maximize fan engagement and monetize live VR experiences, contact us directly at:

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## Links and references

(1)     https://www.verizon.com/about/our-company/fourth-industrial-revolution/5g-changing-future-sports
(2)     Location-Based Media, Entertainment, Content, and Services [published 08 Sep. 2021]
(3)     https://www.ybvr.com/post/ybvr-verizon-and-aws
(4)     https://www.ybvr.com/
(5)     ased on RootMetrics® by IHS Markit's RootScore® Reports: 2H 2019. Tested with best commercially available smartphones on four national mobile networks across all available network types. Experiences may vary. RootMetrics awards are not an endorsement of Verizon. Network details & coverage maps at vzw.com.
(6)     5G Ultra Wideband (UWB) available only in parts of select cities. 5G UWB access requires a 5G capable device with select voice/data & 5G UWB plans. 5G Nationwide available in 2,700+ cities.
(7)     https://www.verizon.com/about/investors/runs-on-verizon/aws
(8)     https://www.verizon.com/about/news/verizon-debuts-cloud-computing-microsoft-azure
(9)     https://www.verizon.com/business/products/networks/connectivity/on-site-5g/