Respawn Entertainment

Medal of Honor: Above and Beyond goes confidently into battle with full support from Unity Multiplayer Services.

◆ unity

The challenge
To bring a classic multiplayer series to
Oculus VR

Platform
Facebook's Oculus VR

Team members
315+

Location
San Fernando Valley, LA

Respawn Entertainment and Unity Multiplayer Services

Respawn Entertainment has grown into a generation-defining AAA studio with top titles including *Titanfall 2, Apex Legends,* and *Star Wars Jedi: Fallen Order*. Their latest title, *Medal of Honor: Above and Beyond*, reboots a famous franchise for the Oculus VR Platform. After its highly successful experience with Unity Hybrid Scaling (Multiplay) for *Apex Legends*, Respawn again enlisted Unity Multiplayer Services to deliver network management, matchmaking, and voice-chat capabilities.

"Respawn is a big studio but Above and Beyond had a small team, and Unity really empowered us to come out with a killer AAA title. We could have done all the infrastructure work, networking, and voice chat, but why? We want to work on the game."

– Terrance Louden, Lead Software Engineer, Respawn Entertainment

The results

— Unity does the networking, matchmaking, and voice comms better and much faster than the studio could, freeing them to focus on gameplay

— Respawn's team easily understood Multiplay's features and API, saving them an enormous amount of development time

— Unity's matchmaking logic is highly customizable, letting the team quickly balance skills, parties, and server resources

— They implemented engine-agnostic Vivox fast and it supports cross-play on all platforms

About *Medal of Honor*

Medal of Honor: Above and Beyond (MOHAB) is set in World War II, where players are agents of the Office of Strategic Services in war-torn Europe. It's a return to the franchise's roots, built drawing inspiration from interviews with actual veterans – you'll land on the beaches, parachute out of B-17s behind enemy lines, and team up with heroes of the French Resistance to dismantle Nazi-occupied Europe. More than just a WWII skin, Respawn has successfully brought history to life with *Above and Beyond* to create an extraordinarily immersive VR experience.

Build vs buy: Freeing up Respawn to focus on game experience

From the start, Respawn planned to concentrate on gameplay while using off-the-shelf components and services wherever possible for backend and networking tasks. For *MOHAB*, the team was responsible for building a AAA experience for an enormous global audience with high expectations. Respawn's title would represent a new level of multiplayer VR games for the breakthrough Oculus Quest device.

Multiplay scales fast for millions of eager fighters

Respawn first tapped Multiplay's auto-scaling hybrid-cloud technology for *Titanfall 2* in 2016. Critics acclaimed its multiplayer performance, and Respawn entrusted the franchise's next incarnation, *Apex Legends*, to Multiplay as well. Their decision was instantly vindicated when the shooter launched to explosive success – during the launch's peak, the orchestration layer was spinning up more than 3,000 cores per minute with 6,500 virtual machines (VMs) in the cloud across 54 locations. Multiplay scaled seamlessly, leveraging global bare-metal and public cloud resources to serve up *Apex Legends* to 50 million players in 24 days and handle over 2 million concurrent users (CCU).

For managing network infrastructure with *MOHAB*, Respawn knew Multiplay's instrumentation, how to deploy it, and what it would cost. It was a known quantity, and it filled in all of Respawn's checkboxes. And because the development team easily understood its inner workings and clear API, they saved an enormous amount of development time. Another vitally important factor in choosing Multiplay was the confidence they had in the support team. Anticipating they would hand off live-ops after launch, Respawn knew that Multiplay would be a trusted partner for Facebook/Oculus.

Smart Matchmaking assembles battle-ready teams

Respawn went to Unity for matchmaking for the same reason it chose Multiplay: to let their developers focus on gameplay rather than infrastructure. And because it's so tightly integrated with Multiplay, Unity Matchmaker (currently in closed beta) can consistently deliver an optimized distribution of players worldwide with diverse server resources.

In war-torn Europe, players immerse themselves in the action-packed lives of agents from the Office of Strategic Services (OSS).

"Unity did the networking, matchmaking and voice components better and much faster than we ever could – it's what they specialize in."

– Terrance Louden, Lead Software Engineer, Respawn Entertainment

"VR enables unprecedented immersion, but when a VR experience is multiplayer, you simply have to have consistent low latency and fast pings. This level of network management requires considerable and rare expertise. Offloading this and other highly specialized workloads is what let our small creative team build awesome gameplay within thrilling stories."

– Terrance Louden, Lead Software Engineer, Respawn Entertainment

Two factors stood out for Respawn when they evaluated Unity Matchmaker. The match logic was highly customizable, letting the team take out-of-the-box functions and quickly alter them to their exact needs to balance skills, parties, and server resources. They could control how Matchmaker filled servers to optimize the VR experience, backfilling, allocating, and deallocating dynamically. They didn't have to wait for an external team to make tweaks.

In addition, Respawn needed security, an often overlooked component in home-grown matchmaking solutions. With Unity Matchmaker, they wouldn't have to perform a security audit when they handed off live-ops to Facebook/Oculus. They had enough to do and didn't need any additional paperwork or hoops to jump through. All in all, Unity Matchmaker proved flexible, dynamic, and scalable.

Vivox gives players the comms edge over enemies

In VR, the body is the controller, and voice multiplies VR's immersive effect. Players scream warnings, grunt commands, and simply get more involved, staying in games longer and returning sooner to drive retention rates. Yet although voice chat has become a basic feature in virtually all multiplayer games, its implementation for VR is still maturing. A lot of processing occurs on the client side, and many voice over IP (VoIP) services can only handle a small number of players – particularly if they use a peer-to-peer approach.

For the MOHAB multiplayer experience, Respawn wanted much more. Engine-agnostic Vivox, the third Unity Multiplayer Service that Respawn brought on for *MOHAB*, could handle the load. Vivox provides communication services for over 200 games – including *Rainbow Six Siege*, *PlayerUnknown's Battlegrounds (PUBG)*, and *League of Legends*. It's been proven at scale with over 120M monthly active users (MAU) and 99.9%+ uptime, and it seamlessly supports cross-play on all platforms. This was another example of where Respawn went for a plug-and-play, off-the-shelf solution and let their team focus on what they do best – gameplay.
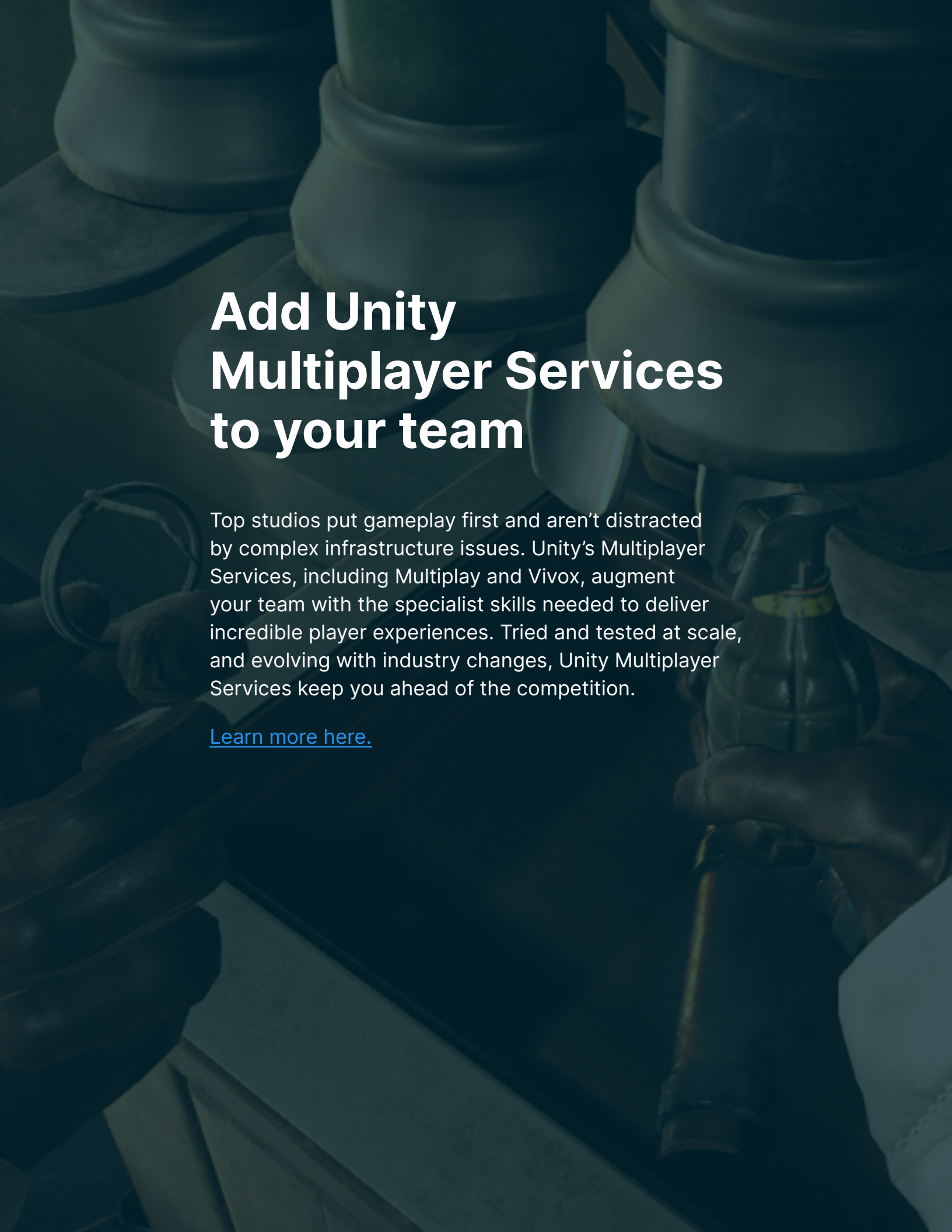
"There's so much to think about when you're dealing with network management. How many dedicated servers will we need, can we scale, how fast can we deploy? We just didn't have a lot of those skills internally.

But we saw how the Apex Legends team had leveraged Unity Multiplay. Our CTO said they just couldn't have done it without them, so we had a clear choice with a proven service."

– Hougant Chen, Senior Software Engineer, Respawn Entertainment

Backend solutions help the front lines triumph

"Gameplay first" is Respawn's byword, and their mission is clear: "Every detail is crafted with purpose, and all of our development disciplines contribute towards creating an incredible gameplay experience for our players."

From their first title, Respawn has partnered with Unity so they can focus their skills on stories and games, letting Unity Multiplayer Services deliver backend components and services. This approach helps enable creativity and levels the playing field for any studio, from the smallest indie to a AAA like Respawn.

Add Unity Multiplayer Services to your team

Top studios put gameplay first and aren't distracted by complex infrastructure issues. Unity's Multiplayer Services, including Multiplay and Vivox, augment your team with the specialist skills needed to deliver incredible player experiences. Tried and tested at scale, and evolving with industry changes, Unity Multiplayer Services keep you ahead of the competition.

Learn more here.