

CLOUDFLARE WORKERS FOR GAMING

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The Opportunity

With over 2.5 billion gamers across the world, global revenues of the video game industry exceed \$150 billion and present an exciting opportunity for Cloudflare Workers to deliver value to this booming market. While video game development is a form of software development, it has many unique features, such as faster response times, artistic aspects, and a different audience, that distinguish the needs of developers in this industry. Preliminary research into the video gaming industry identifies the critical challenges faced by game developers:

1. **Scalability:** as successful video games must sometimes support millions of concurrent users, one challenge developers face is the need to distribute client requests across servers in order to reduce latency and minimize response time. Thus, developers must incorporate horizontal database scaling into their games to maintain functionality with fluctuating player demand.
2. **Testing:** many developers use an iterative game design process, which requires video games to be constantly prototyped and play-tested. This proves to be a challenge when developers discover crash bugs that require major reengineering to fix, but have little time to do so before a deadline.
3. **Time constraints:** rapidly changing technology and players' demands for frequent updates require developers to quickly implement new ideas in order to meet tight deadlines or requests for last-minute changes.

Our Solution

Cloudflare Workers for Gaming will provide video game developers with a platform that allows them to deploy serverless code to efficiently build and scale applications without having to spend resources maintaining infrastructure. We outline below how Cloudflare Workers address the primary problems faced by development teams:

1. A critical developer pain point that Cloudflare Workers targets is addressing scalability and supporting spikes in demand as millions of users play a game at once. While game servers may be geographically distant from players, Cloudflare's CDN ensures proximity to players, thus minimizing end-to-end latency, maximizing throughput, and improving the gamer experience. Cloudflare Workers will also enable developers to customize caching for their unique games and users, using Cloudflare's classic CDN and private cache space. This will have a direct impact on developer / studio revenue by minimizing server space and maintenance, as well as more efficiently allocating developer time.
2. Workers' serverless nature means it provides a lightweight execution environment that will assist developers in fixing bugs or adding features identified by users during playtesting. For example, developers would no longer have to build a new map pack from scratch in order to respond to a tester's feedback, as Workers would allow them to build on existing architecture without being forced to change the current infrastructure.
3. The ability to augment existing applications will also function to reduce the pressure on game creators to constantly provide players with big updates against tight deadlines. Cloudflare Workers for Gaming will save developers' time and relax their time constraints, as developers can focus on building their applications instead of wasting time writing supporting code.

Market Research

The market for Cloudflare Workers for Gaming is comprised of video game creators. Depending on the nature of development, a video game development team can consist of one person or many individuals from diverse disciplines – such as programmers, designers, testers, and artists. Additionally, the team can be independent or part of a larger game development company. To better understand this complex market, we will conduct primary research, creating buyer personas of the heterogeneous members of independent development teams, as well as

the engineering directors, product managers, and game developers of notable video game companies. We will also survey community forums and plan personal interviews with developers to analyze consumer trends and product demand. Finally, we will conduct secondary research, using [journal articles](#) researching the challenges in game development, as well as data from sources such as The Entertainment Software Association, to identify pain points and evaluate competing products.

Product Adjustment and Quality Improvement

While Cloudflare Workers for Gaming will build on our existing Workers product, it will require many adjustments to effectively respond to the needs of game developers and to fit applications. Similar to the previously announced public beta for Cloudflare Apps with Workers, Cloudflare Workers for Gaming should allow developers to take a worker they have previously built and package it as an App to submit for review. Another addition would be to increase our CPU limit beyond 50ms to allow more processing to occur. Finally, a feature that will be valuable to developers is the inclusion of observability tools. This would address the challenge of coordinating with scattered teams, as any member will have the ability to navigate the path from effect to cause in a system to better understand its internal state. For our serverless product, these tools could take the form of telemetry data, allowing developers to measure logs, metrics, and traces to observe their systems.

Before we release Cloudflare Workers for Gaming, we will conduct a formal technical review performed by engineers throughout Cloudflare. This will allow the Cloudflare team to identify any errors or unmet standards that may be corrected to improve the quality of our product before its release. We will then build numerous prototypes and create staging environments to perform user-acceptance testing on developers from different gaming backgrounds. We will ask questions and observe the developers as they complete assigned tasks to pinpoint the market's expectations and experience, and adjust our product accordingly before its release. An important aspect of these adjustments will include incorporating terminology used by video game developers to make their experience as seamless as possible.

Product Launch and Success Measurement

The primary goal of any Cloudflare product is to contribute to our mission of helping build a better Internet, specifically by making it more secure, more reliable, and more efficient. This can be measured by observing the following metrics: bot management traffic logs, DDoS attack occurrence (using Cloudflare's global Anycast network), developer and end-user experience surveys, and performance improvements such as decreased latency and timeouts (using Argo Smart Routing). An additional goal of Cloudflare Workers for Gaming is similar to that of 1.1.1.1, described as "engineering as marketing," as the product's release is expected to improve our brand's awareness and reputation. Similar to 1.1.1.1, our product should increase both signups for our core service and applicants to work at Cloudflare. Finally, an important measure of success is customer experience, which we can evaluate by monitoring community forums and sending surveys to new users.

Potential Risks

The launch of Cloudflare Workers for Gaming presents a similar risk to that of Cloudflare Apps with Workers, as many engineers will be required to review application proposals as soon as the product is released. The risk of such a failure could be prevented by putting together a team of engineers large enough to respond to the broad adoption of our product. The use of backend-as-a-service (BaaS) providers in the video games sector could also cause our product to fail, if the challenges faced by developers are effectively addressed by these competing products. This can be addressed by focusing on advertising the elements that distinguish serverless computing from BaaS, including its event-driven nature, its incorporation of edge computing, and its auto-scaling abilities.

Cloudflare Workers for Gaming provides game developers with a single integrated tool to maximize the efficiency of their production process as well as the speed and scalability of their applications. Our product effectively fulfills the challenges faced by game developers and is an ideal means for Cloudflare to enter this thriving international market.