

Proposal: Cloudflare Workers for Gaming

About Cloudflare Workers:

CloudFlare Workers is a serverless platform that allows developers to run JavaScript Service Workers on Cloudflare's Edge Network. By leveraging V8 isolates, Workers processes run with no/minimal individual overhead and virtually eliminates cold starts [1]. Other advantages to using Workers include dynamic and automatic scaling, support for various programming languages, and cost efficiency (pay-per-usage pricing—eliminates the burden of guessing resource needs) [2].

Market and User Needs:

CloudFlare Workers for Gaming extends to two main user groups: game developers and gamers (who directly influence game design decisions for developers). We focus on game developers since they will be the main users of Workers for Gaming. For developers, general needs include security, ability to learn insights easily, performance monitoring, infrastructure maintenance, overall usability (support for different environments and languages), and flexibility, scalability. We will now highlight some game developer needs in detail:

Scalability - In almost all software applications, it's important to be able to handle varying levels of traffic (i.e. spikes during after work hours or new releases). In the gaming sphere, developers should be confident that if their game suddenly goes viral, the backend can scale up quickly to manage the workload [3].

Flexibility - Existing serverless platforms are still in their introduction/growth phase, and they have yet to offer services that include all the tools needed to successfully launch an application [4]. For example, developers using platforms like AWS Lambda often turn to tools like Dashbird or Metricly to find potential failure points and improve application health [5] [6].

Although our current research shows that this is a promising market to extend Cloudflare Workers to gaming, more accurate opportunity sizing will come with additional research in:

- Video game industry market segments and sizes (i.e. mobile, console, PC platforms and free-to-play, pay-to-play pricing models), to identify key target segments
- Competitors in the serverless, cloud computing, and/or Functions as a Service (FaaS) sector; currently the top players are AWS Lambda and Azure Gaming [7])
- Confirming the market needs with extensive research using qualitative methods (focus groups), current technological trends, and/or competitive intelligence

Product Changes & Additions:

Now that we have an understanding of certain market needs, we can translate them into product additions. Some use cases for serverless computing for gaming include content updates, analytics, and leaderboards [3]. There are many other use cases—additional research will inform areas of focus, but given our current research and understanding of the market, Workers can be applied to an important use case: game analytics. This can include allowing developers to learn insights and user metrics, or allow players to view their own

metrics. Game analytics are critical for allowing companies to analyze gameplay patterns, frequent purchases, or other data to optimize their business models.

Traditionally, methods for game analytics using flat files, databases, and data lakes bring problems including scalability, truncating data, high latency, or significant overhead [8]. Workers can be leveraged for this purpose, enabling developers to learn insights cheaply with a serverless platform; data can be stored and queried with larger datasets, reduced latency, automatic system scaling, and increased flexibility compared to traditional methods [8]. This addresses the scalability and flexibility needs of developers in the context of the game analytics use case.

Hypothesis: If Cloudflare Workers for Gaming introduces support for game analytics, game developers will use this product to apply Service Workers for game analytics.

Pre-Release Methods for Product Improvements:

Before release, we should validate the product by ensuring it meets user needs. In a general sense, we should look at some key metrics from the problem and identify their importance relative to the users. For instance, in our consideration of analyzing game data, we could validate our solution against metrics such as latency, execution time, ability to monitor potential failure points, and/or cost-efficiency to assess the overall quality of the product and whether it addresses user needs. Additionally, testing key performance indicators (KPIs) for the solution can ensure product quality—this can cover various areas such as unit, system, or feature testing [9]. Another tool to help us further validate our product would be releasing a beta test and gathering user feedback from the release. Lastly, Cloudflare can partner with game developers to integrate Workers for Gaming into an existing game; we can then measure differences in performance metrics such as cost, latency, and execution times.

Metrics for Success:

Similarly, we can measure product success with KPIs such as support tickets/escalations [9]. Through this, we track the number of complaints, bugs, calls, etc. to assess the overall success of the solution. Additionally, other indicators for success include the following:

- Number of users that have tried the product
- Number of games launched that leverage the product
- Number of transactions (API call counts)/users per feature [9]
- P50, P99s for latency

Risks to Potential Failure:

A potential risk is that game developers are not interested in implementing Service Workers for game analytics. To mitigate and manage this risk, we should conduct extensive market research for a better understanding of user needs. Another potential risk would be that the product does not meet user needs effectively. We can mitigate this in the pre-release phase by maintaining a focus on quality, ensuring sufficient validation and testing.

References:

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