Cloudflare Workers for Gaming: An Initial Product/Market Analysis

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Executive Summary:
Cloudflare Workers for Gaming is well-positioned to enter the gaming vertical and has tremendous potential for growth and success. With a few tweaks to the existing product and integration with existing Cloudflare technologies (Workers KV, DNS, CDN, etc.) Cloudflare Workers for Gaming should be a valuable asset for Cloudflare, its clients, and gamers across the globe.

Target Customer & Their Problems:
Market potential bodes well for entry - the gaming industry is estimated to be $180 billion by 2021 with a CAGR of over 10% in the last 4 years. Gaming companies are looking for competitive advantages to gain a large market share of this huge addressable market. As the number of gamers and the popularity of multi-player, online gaming continues rising, it provides an enormous set of challenges for game developers:

- Latency to Abandonment - gamers are 2x more likely to abandon a game when they experience a delay of 500 ms; a 2s delay in load time results in abandonment rates of up to 87%. Delays or lags can have dramatic effects on their user base and loyalty (and in turn their revenues)
- Latency to Game Experience - a latency >=100 milliseconds due to server overload changes the gaming experience for the player.
- Game updates - as games expand or update to better graphics, companies often have to update or change their servers completely for memory and storage.
- Security - Because of the high DDOS rate (~35% of all attacks were targeted at the gaming industry) companies also have to maintain security on their servers, which can be expensive and fraught with errors.
- Server Management - companies with players around the globe will have to manage servers globally.

These are all massive issues that gaming companies have a difficult time solving on their own - overhead that they have to invest money, time, and resources into when they could be focusing on providing a better product for their customers and gain market share.

How We Can Help & Market Research Planning:
To alleviate these issues, many game developers moved to VMs in the Cloud instead of hardware servers in their own data centers, but they still needed to manage the OS instances in the Cloud and scale them out on demand. Cloudflare Workers, with its serverless technology, is a natural fit for the gaming vertical to reduce this overhead. In order to confirm these hypotheses, we can conduct market research (i.e interviews, surveys, etc.), reaching out initially to gaming companies that manage their servers in-house or in the Cloud. Based on their feedback, we will be able to cement the key needs of the vertical and modify the product accordingly.

Leveraging Workers:
Workers can be used for dedicated game servers as well as supporting services like matchmaking service (to optimally match players to games). Based on our hypotheses, Workers will emerge a leader in the market if it can handle the high memory usage of games in addition to continuing to minimize latency for a low price and providing effective security.

Beyond the table stakes - minimizing overhead for the client, automatically scaling to demand, built in security, a persistent datastore (Workers KV), etc. - there are four key differentiators that push Workers over the top: lower latency, more servers, lower price, and customizable security. The most prevalent competitor is Amazon GameLift, which uses AWS' Lambda@Edge technology.

1. Latency/Cold start time: Goal: <100 ms. **Winner: Workers** (60 ms), 19 ms better than Lambda. This means highly responsive games for end users.
2. Server Proximity: **Winner: Workers** (200 locations around the world, 15 seconds for instant global game deployment), vs GameLift (9 locations). This also leads to better game responsiveness as every game player is located a few ms away from their game server.
3. Lower price: **Winner: Workers** ($0.50/million requests), vs $1.84 for GameLift. 3x cheaper.
4. Fine-grained security: **Winner: Workers** (allows clients to build and implement conditional responses for inbound requests - ex: location during country-based rollouts) vs GameLift (no such option).

Product Limitation:

Limited memory may be a risk that derails the product and thus might be a possible valuable change to improve the product's quality. Workers instances are limited to 128 MB of memory. This can be a potential problem for a game server where one four-player game like Minecraft can take around 1-2 GB RAM if there is heavy backend processing. We should look into this further and corroborate this through market research and feedback from our beta testing. This is probably the most important improvement that might need to be made in the product - either by increasing the memory limits or by providing a memory package option like Amazon.

Initial Rollout Plan:

1. Conduct initial market research and affirm product-market fit.
2. Review findings and enhance the product features if necessary. If the existing product is acceptable, move to step 4 with the existing product (integrating it with synergistic products like CDN, DNS and Workers KV).
3. Alpha test enhanced Workers for Gaming product in house.
4. Roll out the beta version of Workers for Gaming with analytics enabled. Target current Cloudflare customers in the gaming domain as the early adopters.
5. Continuously update the product as we gather analytics from our product and feedback from the beta customers (recommend that customers run A/B testing on the beta against their existing product so they can quickly see its advantages over the status quo).

General Availability:

After successful beta we are ready for GA:

1. Target the general market of gaming companies/developers.
2. Undertake a marketing campaign that pushes product awareness.
3. Use early adopters as reference customers.

Measuring Success:

We can measure the success of this product through:

- Customer surveys and interviews: focus on how the product has decreased their overhead, player satisfaction (in both improved game performance and decreased latency). A lot of this will come from the A/B testing they conduct with our new product and their status quo implementation.
- Timed latency tests and trial runs on various games, as well as the defense to malicious attack rate ratio.
- After the product gets implemented, we can measure customer acquisition costs compared to customer lifetime value to see if we need to shift subgroups within our target market.