The Target Market

Before creating a Cloudflare Workers for Gaming (GWorkers) offering, we must first establish a target market. This provides sufficient scope to deliver a product that can potentially capture enough clients to ensure the offering is profitable. To do so, we must understand the benefits of Workers as opposed to traditional managed-server architecture. The four primary benefits are that is (1) fast, (2) secure, (3) highly available, and (4) is easy to scale. Low-cost may not be a benefit as if traffic is high but predictable, a firm may be able to ensure cost-savings through mindful server provisioning instead.

Aligning these benefits to the game development industry, **Workers would be useful for firms who are in the preliminary stages of building a game that heavily requires online capabilities and who may find it difficult to forecast its traffic for the first 12 months after launch.** Although serverless code is highly modular and similar to containerized services, this may be daunting for firms who are in production (consequently, having tight schedules) and may not want to experiment with a new distribution system. Also, Workers is not a sensible solution for firms making games with limited online capabilities as firms would not need a fast or highly available service. Finally, serverless computing reaps the most cost-savings when traffic is unpredictable, and as online games tend to have relatively unpredictable traffic for the first 12 months after launch, this is sufficient scope on the market.

With the online computer gaming industry alone approximately valued at 34 billion dollars, this is clearly a large, revenue-generating market. Therefore, this is a suitable target market to start. Over time, a beachhead strategy can be employed to expand into other markets within the industry.

Learning More About the Market and Its Needs

Talking to market players is probably the best move to learn more about the market. Although much can be learned through online research, speaking with infrastructure teams at leading online gaming firms will allow us to better understand the challenges they are facing. From online research, we assume that the major challenges that infrastructure teams at leading online gaming firms are facing include (1) efficiently scaling provisioned servers, (2) securing players' confidential data, (3) ensuring low-latency, and (4) enforcing high uptime.

We can conduct user interviews to confirm these assumptions and to tack on other large challenges being faced. Everything they say can be used to directly improve GWorkers or to discover future product opportunities. Although qualitative data is important when understanding a market and its needs, quantitative data can be equally as important.

Non-confidential logs from the sample group can help. It can provide information such as (1) the average number of calls/second and (2) the average number of crashes monthly with the reasons behind them. This data can help tune GWorkers to effectively handle calls and hedge against common issues that arise in gaming infrastructure.

Valuable Product Features

Currently, Workers alone is a great solution for our target market. It already solves many of the major challenges they are facing. However, two major features can be added to capture more market share.

The first feature is specific to mobile gaming. There has been an underlying trend that the majority of gamers are playing on mobile devices. This is reasonable given the multi-functionality of these devices and the low download conversion cost. Consequently, mobile gaming firms receive more revenues with their freemium monetization models, usually consisting of advertisements and power-ups to further user progress.

Typically, freemium models are successful because they only allow players to play for a limited window daily. If they want to play more, they have to pay, whether that be through watching advertisements or through actual store transactions. The same would go for daily rewards. In the past, players were able to forego this limited window by adjusting their device settings (e.g. changing the local date on their device), costing mobile gaming firms significant revenues daily. Consequently, mobile gaming firms had to provision servers to handle time and reward authentications. To resolve this problem, GWorkers can incorporate an enhanced version of Workers KV (GWorkers KV) that supports high read and write volumes (with low sizes) but can afford to have some latency. By creating this data store, this has two major benefits for the product offering: (1) this can be offered alongside Workers KV as an add-on for Workers

clients, providing more customizability and (2) allows mobile gaming firms to abstract their freemium model architecture to GWorkers KV, enabling them to focus on other features for their games.

We would expect mobile gaming firms to use GWorkers KV to store some lightweight, yet important data, including users' power-ups, time until they can redeem a reward, and more. This would require high read and write volumes but would not require relatively low latency as the difference of a few milliseconds should not affect core game performance. Mobile gaming firms should be interested in this solution as it handles a significant portion of their product for a low cost. Of course, this idea should be validated before development, and creating an MVP should be relatively quick.

The second feature applies to the entire target market. As discussed earlier, Workers is sensible for games that have unpredictable traffic, usually in the first 12 months after launch. However, after these 12 months, firms should have a reasonable estimation about their traffic and should be able to provision servers that provide more cost-savings than serverless computing services would. These firms then may choose to unsubscribe from GWorkers and look for other solutions.

To retain these firms past 12 months, GWorkers should provide a service that allows firms to provision dedicated servers on the edge (GWorkers Edge). Edge computing is paramount for low-latency gameplay, and although this would sacrifice easy scalability, this would provide cost-savings in the long run for these firms, leading to retention. The hardware is in place to begin offering this service; however, there would be many implications to consider, which will be discussed in the *Product Risks* section. This idea should be validated before development and creating an MVP with existing resources should be relatively quick as well.

In terms of prioritization, GWorkers 1.0 should release with the core Workers services and GWorkers KV. GWorkers Edge has requirements that would make its rollout slow. At a minimum, GWorkers KV can be validated by the market.

Methods for Improving Product Quality

To improve product quality, Cloudflare engineers should extensively test the GWorkers suite. Regression tests should be performed to confirm that core services are not affected, and stress tests should be performed to confirm high uptime and low latency in the worst of conditions. These tests should be conducted during development intervals and not only after, reducing expected debugging time. Infrastructure teams at leading gaming firms should be asked of their expectations for the product and our tests should reflect results that meet or exceed those expectations. It is difficult to determine specific methods for product quality improvement during the initial feature ideation stage.

Key Performance Indicators

For now, two KPIs come to mind. The first should be that the majority of gaming firms that have been interviewed should adopt the service within the first two quarters post-launch. Given that they expressed their challenges to us and that we have solved them, that should be the main driver for their adoption. If they choose not to purchase, this may tell us the problems we solved may not be as large and monetizable as we thought. This may also mean we did not actually solve their problems in the first place.

The second KPI is that we receive more clients in quarter two than in quarter one, and one of our clients by the end of quarter two should be a mid-to-large gaming firm that did not interview with us. This implies that adoption is increasing and that reputable clients outside the sample group find the product useful, telltale signs of product success.

Product Risks

There are three significant risks. The first risk is that the problem space may not be monetizable. Firms may have an interest in GWorkers, but this may not translate into sales. This would lead to product failure due to a low adoption rate.

The second risk is in implementing GWorkers Edge. There are high capital expenditures for purchasing additional servers for edge computing and if the feature is not used, this could lead to high sunk costs. The servers can be repurposed for other core services, but this would not be ideal as it increases server supply for no reason.

The third risk is that if other serverless computing services offer similar solutions quickly, this may lead to failure as firms have more options and may not choose to go through with Cloudflare.