

Cloudflare Internship Application: Product Management

Video games are being played more than ever in light of recent events, but with higher usage rates, connection issues are bound to occur. Users blame developers, who struggle with fixing issues on a global scale. Cloudflare Workers for Gaming would take the strain off of the game developers servers and reduce connection issues that video game servers usually have, resulting in better matchmaking, download/upload speed, and overall game quality. Gaming can pit a player from China up against one from the United States - and Cloudflare ensures that both have a level playing field. Workers for Gaming would also allow for faster update and patch speed, which would separate multiplayer games that use it from the rest, and potentially allow multiplayer games to maintain the same polished style of play that single player games have.

Multiplayer online games seem to have difficulty at launch, as various issues tend to arise once the game is officially on the market. Some can end the game before it has a reliable user base, and others are simple issues that can be fixed easily. The issue is not necessarily server capacity as much as it is the bottleneck that arises due to technology issues with transferring information back and forth. Cloudflare Workers would help alleviate these issues, because Workers allows for easier scaling which is important, as these games are being accessed by millions of people at once, and for global access as Cloudflare has data centers worldwide. Taking into account how video games have parallel processes running to maintain rendering, connection, other players and more, opening up this bottleneck is a key benefit that Workers brings to the table. However, video games have issues other than just connection speed, including cyber attacks, security, and code bugs. Given that Cloudflare has a significant number of gaming companies as clients already, their opinions and ideas about the difficulties of launching a game should be compiled, with the most common/important issues being the ones to focus on. Further, Cloudflare has competitors whose initiatives and areas of focus could also be useful sources of information.

In addition, another benefit that Cloudflare could add to multiplayer games of the battle royale variety is their sophisticated random number generator that uses a combination of lava lamps, radiation measurement in Singapore, and the movement of a pendulum in London. This is vitally important to maintaining the competitive nature of these matches.

Next, one way to find drawbacks or negatives to the Cloudflare Workers system is to compare it to other similar products such as Amazon Web Service's Lambda and Azure Functions. Some say that Lambda offers more flexibility than Workers. Other drawbacks include security/stress issues of sending large amounts of data over a vast global network as well as pricing issues. When information is not all going to a singular machine, it is more vulnerable. Also, the reliability of the connection can be fractured because of the differing locations of each data center. Attributing this to gaming specifically, lag/connectivity issues may be likely to occur. Most of these products charge monthly fees, and Cloudflare Workers is comparable to

other products - however, smaller gaming companies may not be able to afford those prices. On the other hand, most multiplayer games have enough funding to do so.

One method that would allow for testing Workers for gaming before releasing it to the market would be utilizing the customers that Cloudflare already has for other systems and asking if they can review the product. A certain amount of time before launch they can receive beta versions of Workers for gaming and send their conclusions in, thus allowing for bugs and issues to be spotted before a full release. Additionally, other companies that are not clients yet could be sent test versions as well, with the hope of them adopting the final version once it is released to the market. With regard to connection problems that are related to the user end - “my wifi, my ping, my lag, my bandwidth...” and so on, gaming companies would jump at putting the brunt of that effort on Cloudflare, allowing testing and updating to be done quickly. Multiplayer games are constantly in states of development, getting patched at quick rates to keep their users happy - otherwise users will jump ship to smoother or simply better games. With Cloudflare Workers, the problems of downloading an update or DLC package would be reduced, thus keeping users happy.

Goals to measure the success of Cloudflare Workers for Gaming could involve using things such as BattleMetrics and the PlayMetrix collector server network. PlayMetrix actually tracks events such as logins, upgrades, or different area level changes. This would be incredibly helpful to comparing the connectivity efficiency prior to using Workers and during. Furthermore, service workers such as the ones Cloudflare deploys, operate using event listeners, which the metrics could accurately draw data from, to test. Although I am unsure of the exact percentage increases in efficiency, testing how event listeners are triggered would be key to seeing if the product has achieved the goal. Another benefit provided is using caches to preload information. When regarding game areas and map loading, using caches would significantly decrease the time to render an area, which could be tracked in real time by watching the rendering on screen. About response times for this specific area, based on other case studies, I would guess that response times should improve by 500 ms, or around a 30% increase in efficiency. Other goals could be comparing the cost of using server clusters versus using Cloudflare Workers - with the end, being to provide a consistently cheaper service.

Finally, risks that could potentially undercut a successful product launch include security, lack of flexibility, and user issues. While Cloudflare can help avert many DDoS and DOS attacks which can cripple a game, it runs the risk of ISPs and government actors being able to possibly access information that users consider private. There are also substantially greater locations that criminal elements can access. Another issue is that using a CDN could actually cause slowdowns because of the extra layer involved in data transfer. Additionally, the fact that all information is released quickly at once can actually be a negative, as a bad patch would cripple the game in an instant.

