Cloudflare Workers for Gaming

Approach
Currently, AAA game publishers like EA, Activision-Blizzard and Riot don't use any kind of Cloudflare product to improve their gaming traffic. This report details a basic glance at how the Cloudflare Workers (CFW) could approach building a product that is attractive enough to lure those publishers onto Cloudflare's content delivery network (CDN).

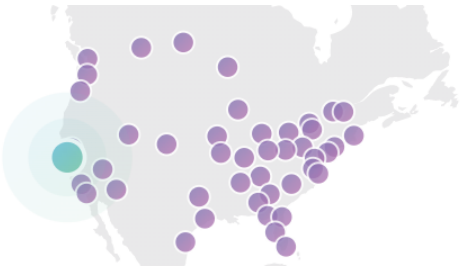
For most of my research I've used League of Legends publisher **Riot Gaming** as a proxy for the entire gaming industry, because they're the largest game developer that I already have some understanding of. Additionally, they have well documented architecture https://technology.riotgames.com/news/architecture-league-client-update, and community that posts frequently about the company's network.

**means further research is needed for other AAA game developers, as well as indie developers*

***this report focuses on the connection between a player's game window and actual game server, which doesn't use HTTP web server protocols, but rather customized bespoke servers*

Concerns of Game Developers

Improving server access latency
Riot currently uses a private content delivery network (CDN) for their games, which uses one server for each other their "regions", like North America, Asia Pacific, Europe, etc. In all of North America, Riot's only game serve is in Chicago, which means pings of 70ms+ on the West Coast, and upwards of 300ms for anyone playing overseas.



Cloudflare's server locations across the US

Cloudflare has a ton of servers spread across the country, which could be used to improve the latency experienced by gamers who live far from the server.

Cloud Computing (NVidia GeForce)
Non-gaming personal computers often struggle with RAM when running games like League of Legends. For other games with more updated graphics, the processing power that goes into rendering these graphics is often incredibly expensive for older computers. A solution that Nvidia has adopted is to have the graphics and rendering processes run on their cloud servers, and allowing users to simply stream the video feed to their computers.

This is a relatively new market, and Cloudflare could potentially address it, but one of the major drawbacks in my mind is that Nvidia has already cornered this market aggressively, and the kind of dedicated gamer who might need this service likely have their own custom gaming PCs.

Ddos and Cybersecurity
Ddos attacks are common in all online multiplayers games, and Cloudflare's security protocol could be used to protect game servers from these attacks, instead of requiring gaming publishers to address.

Proposed Product Innovation:

I chose to work on the first problem, because:

- **Creating Incentives:** Riot developers have no incentive to use CFW if their primary product goes through a private CDN that Cloudflare doesn't support.
- **Lag is most important:** Gamers consistently list laggy servers as their greatest source of frustration, almost always over graphics.
- **Cloudflare already has the servers:** Riot has one server in Chicago
- **Easy to test:** Riot is in the process of releasing a series of new games, which this architecture can be launched and tested with, if a relationship can be established.

Custom Calling Protocols + Creating endpoints for bespoke servers in CFW
Cloudflare as a whole is optimized for HTTP/TCP calls to web-servers, and it's really good at improving the latency on these fairly slow protocols. However, game developers instead use custom calls to private servers with their own architecture; what works or Riot wouldn't necessarily work for Activison-Blizzard, and vice versa. These calls are typically measured in bytes rather than kilobytes.

To accommodate for this, I propose we create an endpoint where the existing architecture of Riot's tailored bespoke servers can be distributed across Cloudflare. Cloudflare should also create packages that would allow game developers to import their own custom calling protocols, or design these custom protocols from scratch.

Methods for QA Pre-release/ Beta Testing

Test

Goals & KPI

Risks & Concerns