Exploring the barriers to the broad adoption of cloud gaming

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Table of Contents

01 Introduction
Background and context for cloud gaming research

02 Definition
Defining cloud gaming with a simple technical explanation

03 Broadband
How infrastructure remains a limiting factor in adoption

04 Heterogeneity
The tension of providing a homogeneous solution to a heterogeneous market

05 Business Model
Misalignment between streaming model and the current market

06 Mitigating Strategies
Potential strategies to mitigate challenges
Introduction

Cloud gaming has been a sought-after dream in the industry for quite some time. With the global gaming population approaching 3 billion by 2021[1], it is no wonder that all the major industry players, and even some external parties, want to try and create the platform that unifies them all. However, this dream is not a new one to emerge, it has been around for over two decades. While gaming has had significant changes since that time, the dream of cloud gaming has remained the same with very little commercial success. That being said, the direction of other media formats such as movies, TV, and music all point to a cloud based streaming service as an inevitable future for the gaming space, so what is it in 2019 that continues to cause gaming to lag?

“The greatest disruption of entertainment is the combination of streaming and subscription... More people are engaging, with less friction, through cloud-driven services”

Andrew Wilson | CEO Electronic Arts

The core goal of this paper is to help illuminate three significant roadblocks (broadband constraints, homogeneous offering to heterogeneous marketplace, & business model misalignment) in a way that allows various organizations to optimize their strategy and approach to cloud gaming. While there will be some high-level thoughts on overcoming these obstacles, it is important to recognize that the organizations pursuing cloud gaming all have a unique position in the market and would attack these challenges in different ways depending on that position. With each section, readers are encouraged to evaluate these challenges with these two points in mind:

- What aspect of the roadblock can your business/organization control and what operates outside of your influence?
- How does your solution to cloud gaming handle these challenges & enhance the current state of the ecosystem in its entirety?

What is Cloud Gaming?

Cloud gaming (also called gaming on demand) referred to video games that users could play on their computer or mobile devices through a “thin client” (i.e., a browser or small app) and for which most of the code and computing action took place on remote servers and was streamed in real time to users’ devices. Cloud gaming allowed users to play sophisticated games – which traditionally required powerful computers or consoles – across a wide range of devices[2].

There is a long history of cloud gaming, but one of the first major instances would occur all the way back in 1995 with Total Entertainment Network (TEN). TEN introduced one of the first cloud gaming services in which you could stream some basic games on your PC. Since that time, there have been countless companies and corporate projects. Many of those companies are no longer in business, like OnLive which officially went debunk in 2015, and many of the projects have had little success or have been shuttered completely.

However, in the past year there has been a strong reemergence of cloud gaming companies and projects from industry veterans like Sony (PS Now) or Xbox (Gamepass) to brand new entrants to the space like Google (Stadia). This increased activity could indicate that whatever hurdles that plagued the growth of this technology before having now been overcome. Upon further examination, you will find that many of the same significant hurdles still stand in the way of unifying all 3 billion gamers. Furthermore, it appears that actions currently taken by these major players could indicate that they may be overlooking or misunderstanding these challenges.

Broadband Constraints

Game streaming technology has come a very long way from Total Entertainment Network initial introduction. Countless companies such as Nvidia, Xbox, PlayStation, and Google, have demonstrated the ability to stream high quality games to a multitude of devices with little latency. However, the success of these demos hinges heavily on internet speed. As seen in Figure 1, broadband is the center of the entire cloud gaming experience. Furthermore, it takes significantly higher speed to stream a game (compared to a movie or music) due to both the size of the experience and the fact that there is a user input on the other end. Broadband speed and reliability are a significant bottleneck when it comes to cloud gaming, even for developed markets.

Take Nvidia's streaming service, the Nvidia Shield. The minimum requirement for download speed is 10 Mbps (megabits per second). However, in order to stream at 1080p at 60 frames per second (a standard for many forms of HD content) the requirement is 50 Mbps.[3] When comparing to that of the current average global broadband speed of 9.1 Mbps[4], you see there is still quite the gap before decent cloud gaming becomes truly viable. In fact, only one country in the world, Singapore[4], has an average broadband speed above the 50 Mbps benchmark.

Even though we are still at a bit of a gap in terms of consistent broadband speeds to enable cloud gaming, there are two reassuring factors that indicate it is only a matter of time before these challenges are resolved. The first is the rate in which broadband speeds are growing. Just last year, broadband grew +23% worldwide[4]. In addition to the rate of growth for broadband, mobile internet speeds may start to pave the way in enabling this technology in the future. With the promise of 5G on the horizon we could see another path towards faster connectivity. It is important to be mindful that the 5G rollout is an uncontrollable factor for many players in cloud gaming, and the timing for a meaningful rollout is still unclear.

It is just a matter of time for this constraint to be resolved, but it is still important to be conscious that predicting that timeline is more difficult than it would appear at first glance. Broadband increases are an infrastructure-based challenge and, like with any infrastructure challenges, this may take much longer than expected, particularly in developed markets. Overall, we are likely still years away from the penetration of high-speed internet required to enable game streaming at large on a global scale.

Homogeneous Offer/Heterogeneous Market (Mobile)

A more critical challenge observed with cloud gaming is the misdirection of the value proposition to both intended consumers and internal players in the ecosystem. The core benefit that cloud gaming provides to consumers is that it lowers the barrier to entry into higher quality gaming. You no longer need a multi-thousand-dollar computer or multi-hundred-dollar console to gain access to these high quality games. By removing this barrier you could expect a dramatic increase in the potential audience for the gaming market. From this perspective, the value proposition appears to be as follows: everyone now has access to better games. However, the evolution of the gaming market and its expansion to multiple platforms has created consumer behaviors and preferences that diminish the impact of this offer.

For context, as we examine this challenge, I will admittedly oversimplify the market by referring to two sets of “gamers.” The first set I will call mobile gamers; these are casual video game players who primarily play mobile games. The second set will be called home gamers, these are more core video game players who primarily play on console or PC. While there is even more nuance among the gaming market segments, just the simple emergence of mobile has drastically changed the landscape.

To start, it has played a key role in expanding the definition of a “gamer.” A large proportion of the 3 billion number referred to earlier comes from mobile players with 2.1 billion people represented in the segment.[5] In addition, mobile games are accounting for a larger portion of the gaming market revenue, approaching 50%. Nearly everyone is now a "gamer" thanks to mobile penetration. However, mobile has also introduced a completely new set of expectations from consumers on how and what they want to play. As the mobile gaming market has matured, the dominant design for a successful video game product, at scale, has emerged. One key aspect to that design has been the more passive nature in which a mobile game is played. Out of the current top 25 games, only 1 game (Fortnite – a separate anomaly), requires any pointed interactivity that would usually be found in the top home market games.[6]

So, this logic of cloud gaming being a unifying platform in which all gamers could be served hinges largely on this mobile gamer market. However, the type of entertainment in which cloud gaming’s value proposition is built on are for more “lean forward” experiences that simply do not seem to resonate with a mobile gamer audience (at least not while they are on the mobile platform).

Homogeneous Offer/Heterogeneous Market (Home)

The value proposition for home gamers is the same – a lower cost barrier to entry to the games they currently play. This makes sense and cloud gaming fully realizes this value created for the more casual portion of the home gaming market. The challenge I would offer is that this portion of the home gaming market is less important both in terms of driving adoption and monetizing.

With any new technology, the market you typically get to become evangelists tend to be the core (early adopters). This is particularly true when it comes to the gaming space. In 2013, Xbox launched their new console (the Xbox One) which had an undeniable focus on the mass market and was a critical factor in a major setback in the console market race with PlayStation.[7] Beyond that, most of your long-term paying base comes from the most core gamers. Having worked at three of the largest publishers in gaming (EA, Activision Blizzard, and Xbox) I can tell you first hand that the 80/20 rule is in full effect and it is no secret that an extremely large portion of gaming revenue comes from a relatively small percentage.

If the target appears to then be the highest segment of core gamers, the main issue with cloud gaming is that while it can be a “good enough” experience it still falls noticeably short when compared to local processing.

For core home gamers the value they receive from an improved experience, whether from a high-end console or gaming PC, justifies the cost of that box. It also outweighs the net value gained from a cloud streaming service given the current detriment to quality – especially for any multiplayer experiences.

As mentioned earlier, streaming tech has improved drastically and will continue to close this gap. However, the boxes themselves (console/PC) are also improving at a similar rate, prolonging this challenge and likely further delaying adoption among the core.

In contrast to cloud gaming, Netflix found success regardless of platform (home/mobile) due in large part to the fact that viewing linear media is always “lean back” content. The only major change moving from one platform to another is the size of the screen. The way the customers consume content stays consistent regardless of whether doing so in their home or on the bus – you sit back and watch. With games, there is a variety in expectations and preferences that have emerged due to the distinction of home versus mobile gaming. This has ultimately caused an extremely heterogeneous consumer market in every aspect of the experience from the interface with platform to the price elasticity of the market.

To resolve this issue you would need a platform that could be used more universally. Recently there have been relatively successful attempts at platform consolidation within the gaming space. The Nintendo Switch, a device that is both a home and mobile gaming platform, was the fastest selling console in U.S. history (compared to Microsoft and Sony in the same time period), selling 8.7 million units in 20 months.[8] That momentum has since slowed, but the Switch’s early success is a positive indicator. While there is some movement within the gaming space, as mentioned earlier the true value lies in that of the traditional mobile space. Mirroring content to your television via a Chromecast or Apple TV is still in very early stages in terms of adoption and there is still no clear market leader when it comes to bringing together a mobile and home interface. In short, a unified device that bridges home and mobile entertainment is a critical piece to the broad adoption of cloud gaming. As it stands today, bridging that gap is still far off with little material movement towards consolidation from either producers or consumers.

Streaming Business Model vs. Current Market

For any cloud streaming services, one of the biggest components of success is the ability to acquire and maintain quality content for their platform. Incentivizing these content creators, particularly the major ones, typically comes at a fairly high cost, especially in the early stages of platform development. A high cost in and of itself isn’t a crippling challenge, but for games, assessing the proper cost that satisfies the needs for both developers and cloud platform holders is significantly more complex than other forms of media. The root cause for this complexity is the variety of viable business models that exist within the gaming ecosystem. One-time purchase, subscription, free-to-play, and freemium all meaningfully exist within the gaming space. Trying to unify these business models within one subscription platform and service is quite the mountain to climb.

Just one of the major pain points that emerges as a contributor to the consolidation of these business models comes with incentivizing the game developers. Many of the models above require a significant player base in order to obtain success. This drives developers to seek the best channel(s) that will maximize the top of their funnel. The important trend here is not the business model in and of itself, but the fact that these models have shifted a view of individual games from being simply content to a service. This is drastically different from what any individual song, book, movie, or TV show looks like within their respective ecosystems. In addition, many of the most successful games, and thus most compelling content, tend to leverage the games as a service approach. *Fortnite*, for example, is currently the most popular game in the market across all platforms and leverages a free-to-play model.

The challenge that emerges is how do you convince the developers of a game like *Fortnite* to add a barrier (a subscription to a cloud platform) when their success is contingent on the greatest level of accessibility.

In furthering this point, Epic (the creators of *Fortnite*) have recently launched their own PC distribution platform (Epic Games Store) as an effort to maximize and control their player reach. To help illustrate how this challenge has continued to persist in other more developed streaming markets, we can revisit Netflix (or other similar streaming services) and their struggle to capture the audiences of live events. Live events, particularly sports, look much more like the service-oriented games noted above. They have clear, long-term, evolutionary content and are thus supported with business models to complement this style of product. In addition to live viewing simply being counter to the core strategy of Netflix, the other obstacle comes with the fact that the live event content creators are dependent on advertising based business model which are very similar to free-to-play models. Their goal is to lower the barrier to entry as much as possible in order to reach the most eyeballs, but Netflix as a platform adds another barrier to that accessibility. At this point, scale has slowly begun to address this challenge. Now that streaming services are so large you are starting to see more live events emerge on their platforms (i.e. Amazon Prime introducing Thursday Night Football from the NFL).

What is important to note is that it took materially more time to get live sports on the platform and during that time consumers were trained in completely different viewing patterns (binge watching) with new monetization expectations that remain counter to that of live content creators. (i.e. no ads).
Potential Strategies to Mitigate Challenges

Regardless of the challenges noted, the future of gaming will undoubtedly lead to cloud gaming. The streaming model has been fully adopted in every other form of media, so it is a relatively safe bet that it will popularize in gaming as well. However, the timing of that end may be a bit further out than anticipated and continue to be pushed out depending on the actions in which companies take in driving adoption. Although each cloud gaming platform will and should approach these challenges based on their own strengths and positions in the market, the below captures some personal thoughts on mitigating these obstacles and driving adoption.
Broadband Constraints

There is not much of a solution here other than being mindful of this broadband constraint and the timing in which it will be resolved at scale. Therefore, playing it slow is the largest piece of advice I have as it relates to this challenge. By taking note of the slow pace in which potential solutions like 5G or broadband speed increases will occur can help right size the investment amount and expectations on the pace in which return will be realized.

Homogeneous Offer for Heterogeneous Market

Like the technical challenges above, the consolidation of platforms is also an effectively unsolvable challenge for most cloud gaming platform builders and will resolve itself with time. That being said, I believe a sharper focus on the home gamer market is the best area to invest when it comes to a streaming platform. This is the more core consumer base and the audience that will provide enough early adopters to drive past the adaption gap in order to reach the major markets. The key challenge with converting these consumers comes with developing and offering the proper content.

Business Model Misalignment

When it comes sourcing the content and converting developers, I would argue that the best approach is to focus purely on one-time transaction, local player content for cloud platforms. First off, a focus on this content allows you to avoid the challenges that come with consolidating more service-oriented games. Effectively, you are creating a service around one-time purchase experiences which is a much simpler transition and a clearer value proposition to consumers.

In addition, one-time purchase content developers have fewer and fewer opportunities to create due to the shift in the market to service-oriented products. These developers would be much more open to joining the cloud platform as it gives new life to the viability to single player experiences. Finally, this one-time purchase content provides the greatest coverage in terms of game preference among home gamers, while requiring the least technical intensity (increasing the quality) to stream. Single player games like the Last of Us and God of War have a tremendous reach across both core and more casual home gamers and show there is still a strong demand for this type of high-quality one-time purchase-oriented content.