Free Version | 2022

Global Cloud Gaming Report

Key Developments | Stakeholder Spotlight
Market Sizing and Forecasts

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Foreword

Foreword

Welcome to the free, light version of our 2022 Global Cloud Gaming Report. In this version, we include some of the high-level takeaways of the full report. We hope you enjoy this free preview! Please feel free to contact us to access the full 2022 Global Cloud Gaming Report.

Cloud gaming is maturing. Service providers are innovating across monetization and use cases—attracting more users and attention than ever before to the power of the cloud. At the same time, some of the biggest players in traditional gaming—Xbox and PlayStation—are supplementing their core hardware experiences via cloud gaming. Playing games via the cloud is becoming inevitable, and cloud-enabled games from some of the biggest names are on track to win over even the staunchest hardware enthusiasts.

Beyond hardware, cloud gaming skeptics—in the business and consumer world alike—are beginning to embrace the value proposition and future promise of cloud gaming. To help you navigate these uncharted waters, we are proud to present our fourth Global Cloud Gaming Report.

As always, the report offers a panoramic and specific overview of the cloud gaming ecosystem, powered by the market's best quantitative cloud gaming data—from serviceable obtainable market and paying users, to revenues and consumer insights. Complemented by this data, our qualitative insights contextualize how the cloud gaming market is evolving, adapting, and finding its footing as a major segment in the overall games market.

Our team of expert analysts has curated a selection of the most impactful developments in cloud gaming, helping you unpack what they mean for you and your business. This year, we analyze cloud gaming's role in the future of hardware, the paradigm shift of cloud-enabled games, seamlessness and removing friction, why positioning matters, and where video-streaming services and blockchain games fit into the equation.

Seamless is the word of the day, and the cloud is allowing players to instantly try a game before they download it, access new-generation content without hard-to-find hardware, and jump into a game from a live-streamed video. Video-streaming companies like Netflix are also looking to games to help boost engagement following fierce competition within their own segment. We believe cloud gaming will have a huge part to play here—again, making everything more seamless and removing friction.

We include two deep-dives into two special focus topics. The first analyzes how cloud gamers across four key markets—the United States, Germany, Brazil, and China—are engaging with cloud gaming, their motivations, and what could improve their experience. The results are encouraging for the market's future. Then, we dive into how the metaverse is leveraging the foundations of cloud gaming to pave the way for the future of the internet.

More qualitatively, we interviewed key stakeholders pushing cloud gaming forward—Xbox Cloud Gaming, YuanJing, Well-Link, Hadean, and Radian Arc. Their unique perspectives, expertise, and combined global coverage represent most aspects of the cloud gaming business.

With big tech, telcos, consumers, game publishers, entertainment companies, and more seeing cloud gaming's silver linings, the segment is on track to become a major (and perhaps one day the major) segment in games. As a reader of this report, you evidently see that potential too. We can't wait to continue watching and analyzing cloud gaming's journey as it unfolds.

Guilherme Fernandes
Cloud Gaming Lead

$2.4Bn	**31.7M**
Global cloud gaming revenues in 2022 (base scenario)	Global cloud gaming paying users in 2022 (base scenario)

Includes access to all the granular data in the Newzoo Platform and a mid-year update.

01.

Methodology

Methodology

At Newzoo, we aim to give our audience the best possible overview of cloud gaming's potential in the games market. As the segment matures, business and consumer expectations around cloud gaming are becoming clearer. Nonetheless, we continue to model multiple scenarios, as the early nature of the cloud gaming market makes it more susceptible to a range of unforeseen developments. The foundation of our model remains largely the same, but we thoroughly updated several data points to ensure the numbers in each scenario make sense globally, regionally, and for the 36 markets we survey in Newzoo's yearly syndicated research (Consumer Insights – Games & Esports).

Our forecast is based on our proprietary research in the games market. At the highest level, Newzoo's cloud gaming model focuses on three key metrics: serviceable obtainable market (by number of players), paying users, and revenues.

The online population and number of players per country are the starting point of our forecasts. In addition, we use average internet connection speeds in each country, urbanization rates, and service availability to estimate the size of the potential user base. From the total addressable market of game enthusiasts, we zoom in on those who have access to a cloud gaming service. We no longer consider cloud gaming awareness as a strict requirement, due to changes in how the services market and monetize themselves. These changes mean that some potential cloud gaming users could be unaware of the technology. We then segment these enthusiasts into different personas based on Newzoo's Gamer Segmentation and analyze the likelihood of cloud gaming interest and adoption for each persona. We also look at the game enthusiast persona split per market, which comes from our proprietary consumer research. Together, the personas encapsulate all the ways an individual can engage with gaming content. Ultimately, this leads us to the serviceable obtainable market (SOM) for cloud gaming services.

The revenue scenarios use the same model as a foundation. Starting with the SOM, we developed three scenarios for the future of cloud gaming. The differences between the scenarios are based on four major inputs: the availability of each of the major services analyzed per market, the conversion rate to paying users, the share of year-long subscribers among those paying users, and the average revenue per paying user (ARPPU).

We begin by considering services' availability across markets, using publicly available information regarding various cloud gaming service providers as a starting point for historical data. The forecast is based on the existing geographical footprint and internet infrastructure in different markets, as well as our own assumptions. Then, we determine the share of the SOM likely to convert to paying users. These ratios come from our primary consumer research and publicly available data on subscriber numbers for existing services. We expect the share of paying users to grow over the years as services become more robust and gamers can experience their quality. Since many of these services are subscription-based, the third input is the share of year-long subscribers among those paying users. This share is the result of our benchmarking against public data of similar services in other industries (e.g., Netflix, Spotify, and others), as well as information provided by cloud gaming companies that have agreed to share some of their data with us. Finally, the ARPPU represents the average spend on cloud gaming services and games played via the cloud. We split ARPPU between monthly fees (for subscription-based services), in-platform spend (which can be both full-game purchases and in-game transactions), and games consumers buy with the sole purpose of playing them via cloud gaming services.

We define cloud gaming revenues as the amount the market generates via consumer spending on cloud gaming services and games played via the cloud. This includes digital full-game purchases, in-game spending, and monthly fees for cloud platforms like GeForce NOW and cloud-powered subscription services like Stadia Pro. Naturally, we use a different approach for subscriptions offering more than cloud gaming, like Xbox Game Pass Ultimate (which also allows users to download games). For these hybrid services, we include a representative share of the revenues generated via cloud gaming—not all revenues generated via the service—bounded by the incremental price difference between the tiers with and without cloud gaming. Our revenue numbers exclude taxes, advertising revenues earned in and around games, (peripheral) hardware, and business-to-business services.

Our revenues and growth rates reflect the year-end US$ exchange rate. All numbers in the report represent the state of the market by the end of that year. For example, if we state that the market cap in 2021 was $1.4 billion, this implies that players spent that much on cloud gaming services between January 1 and December 31, 2021.

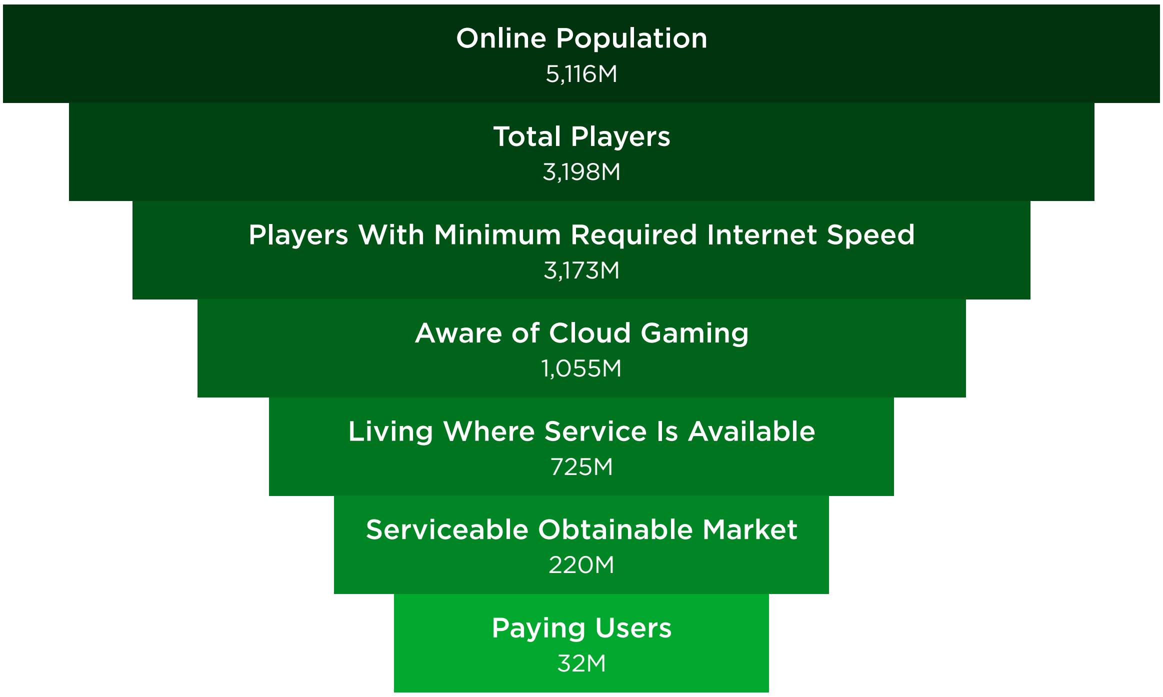
In terms of countries and regions, we define the market size as the amount companies generate from consumers in that specific territory, as opposed to the amount companies based in a particular territory generate worldwide.

Overall, our forecasts are always the outcome of an iterative process, reviewing the implications of our assumptions on a very granular level. Our expert team of forecasters comes to a consensus to ensure we neither underreport nor overreport new developments and market news. During this process, we rely on quantifiable metrics, such as historical growth rates, and include hard-to-quantify metrics, such as (gaming) culture, spending behavior, and other societal factors. Thanks to expanding conversations with multiple industry stakeholders, we also have increasing—and oftentimes exclusive—access to actuals and other insights, which add to the accuracy of the results.

Global Cloud Gaming Market Funnel

Segmentation of the Market in 2022

Note: funnel is not to scale with totals



02.

State of the Ecosystem

Cloud Gaming Ecosystem Diagram

Note: This diagram is not exhaustive. We welcome inquiries for inclusion in a future update at questions@newzoo.com.

Key Developments and Trends Analysis

In this section, we analyze the most impactful developments in cloud gaming and what they mean for the market's future. We discussed the topics below in great detail in the full report. All information is up to date as of the time of writing (September 22, 2022).

Post Scriptum: Stadia Shutting Down

The possibility of Stadia shutting down has loomed over the cloud gaming market since its unsuccessful launch in 2019. Before the news released on September 29, 2022, the abrupt closure of Google's first-party game development studios in February 2021 was one of the major signs that the company could one day completely divest from B2C cloud gaming. What we wrote in the March 2021 Update of the Global Cloud Gaming Report about Stadia still rings true today:

It's important to decouple this news from the growth or viability of cloud gaming as a whole. [...] Google's stumbles were primarily strategic ones and do not indicate that [cloud gaming] itself was faulty or was not well received by consumers. [...] We expect this to only affect Stadia specifically, as the cloud market overall is poised to exhibit strong growth in the coming years.

The positive developments in the cloud gaming market that we analyze in this report, which support a bright future for the technology, do not evaporate due to Stadia's shutdown. Moreover, Google's decision to refund all the hardware and game purchases related to Stadia also prevents a broader negative ripple wave in terms of player perception of cloud gaming. Some current Stadia users might exit the cloud gaming market following this announcement, but we expect the vast majority to simply switch to another cloud gaming service. After all, barriers to entry have been steadily decreasing across the cloud gaming market and consumer satisfaction with the tech is generally high (as we explain in this report).

Therefore, we do not think it is necessary to adjust the forecasts we made prior to the Stadia shutdown announcement. Our estimates of Stadia paying users were low throughout the forecast (less than 3% of global cloud gaming paying users from 2023 to 2025). Thus, any users that do decide to completely exit the cloud gaming market fall within a reasonable margin of error.

1. Cloud Gaming's Role in the Future of Game Hardware: Replacement or Complement?

2. Cloud-Enabled AAA Games: A Paradigm Shift for Core Gamers' Opinions on Cloud Gaming?

3. Seamlessness and Removing Friction: Core Pillars of Cloud Gaming's Future

4. Xbox and Why Positioning Matters in These Early Stages of Cloud Gaming

5. Cloud Gaming: Bridging the Gap Between Video and Games Content

6. Blockchain Gaming Might See Its Future in the Cloud

03.

Cloud Gaming Market Sizing & Forecasts

Estimates in this chapter are from September 2022. We review these biannually and update them if needed here: newzoo.com/key-numbers.

Cloud Gaming Market Sizing & Forecasts

In this section of the report, we present our updated view on the current size and outlook of the cloud gaming market. We learned that cloud gaming companies continue to invest in the technology, hoping to further improve and expand their platforms, and that the number of cloud gaming users shows strong growth. Service profitability is also improving, thanks to efficiencies related to economies of scale, technical advancements that enhance unit economics, and increased usage as services refine their business models and expand their use cases (as Newzoo had predicted).

Like in previous years, we begin by analyzing cloud gaming's serviceable obtainable market. Then, we present three scenarios for paying users and revenues:

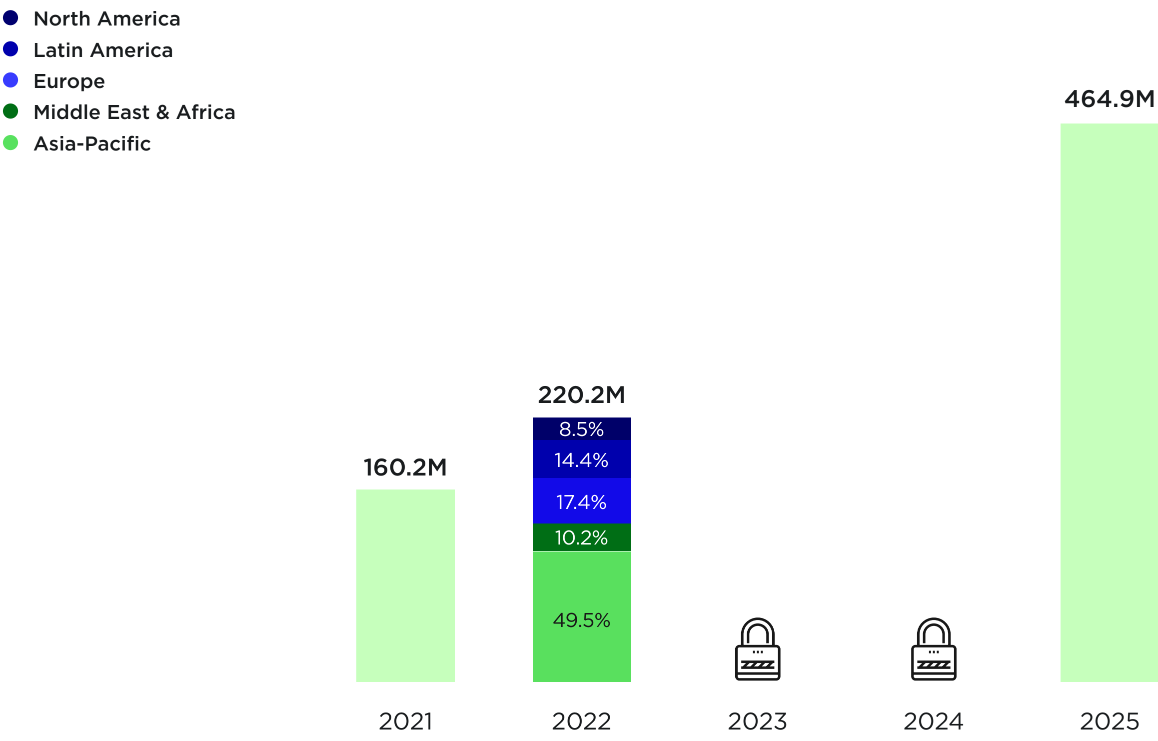
1. Our base scenario is the most likely scenario based on current developments..
2. Our optimistic scenario shows what could happen if cloud gaming faces no set¬backs, reaches unexpected breakthroughs, and services continue to grow—or find new use cases—faster than expected.
3. Our pessimistic scenario, which is less likely than before given encouraging market updates, would see services struggling to find new audiences and retain their current user base. In this case, the market would focus on fixing issues rather than growing.

5.1. Serviceable Obtainable Market (SOM)

The serviceable obtainable market (SOM) represents cloud gaming's global opportunity—namely, the number of people whose internet connection meets cloud gaming's minimum requirements, who live where cloud gaming services are available, and are interested in using them (past trial periods). We also consider awareness of cloud gaming as a concept, but this is no longer a strict requirement. After all, companies are now putting less emphasis on the cloud aspects of their services, so even service users may be unaware they are playing games via the cloud.

Cloud Gaming's Global Market Opportunity

Serviceable Obtainable Market (SOM) per Region | 2021-2025



Note: Find this data split for 10 subregions and 36 markets in the dataset.

Find the full five-year SOM forecast per market in the complete, paid version of this report: www.newzoo.com/cloud-report.

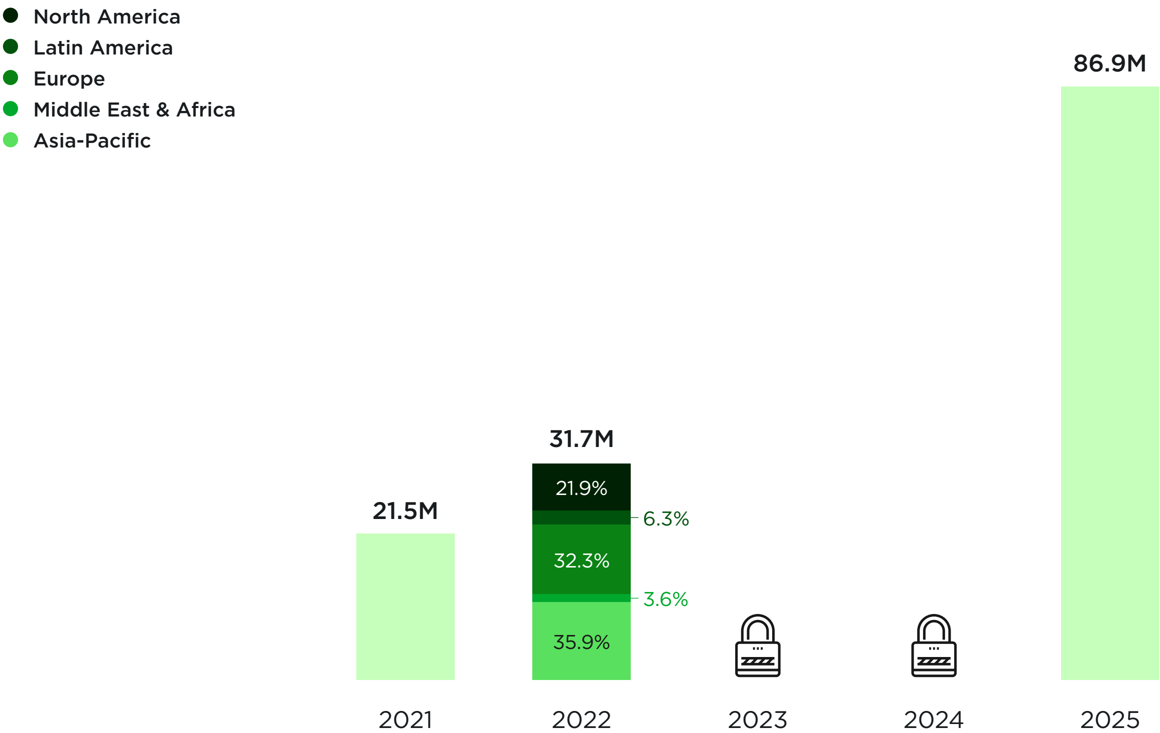
5.2. Scenarios for Paying Users and Revenues

Base Scenario

In our most likely scenario, we forecast 31.7 million paying users of cloud gaming services by the end of 2022, spending a combined $2.4 billion on cloud gaming services and games streamed via the cloud. By 2025, we forecast these metrics to grow to 86.9 million paying users spending a combined $8.2 billion.

Cloud Gaming Paying User Forecast per Region

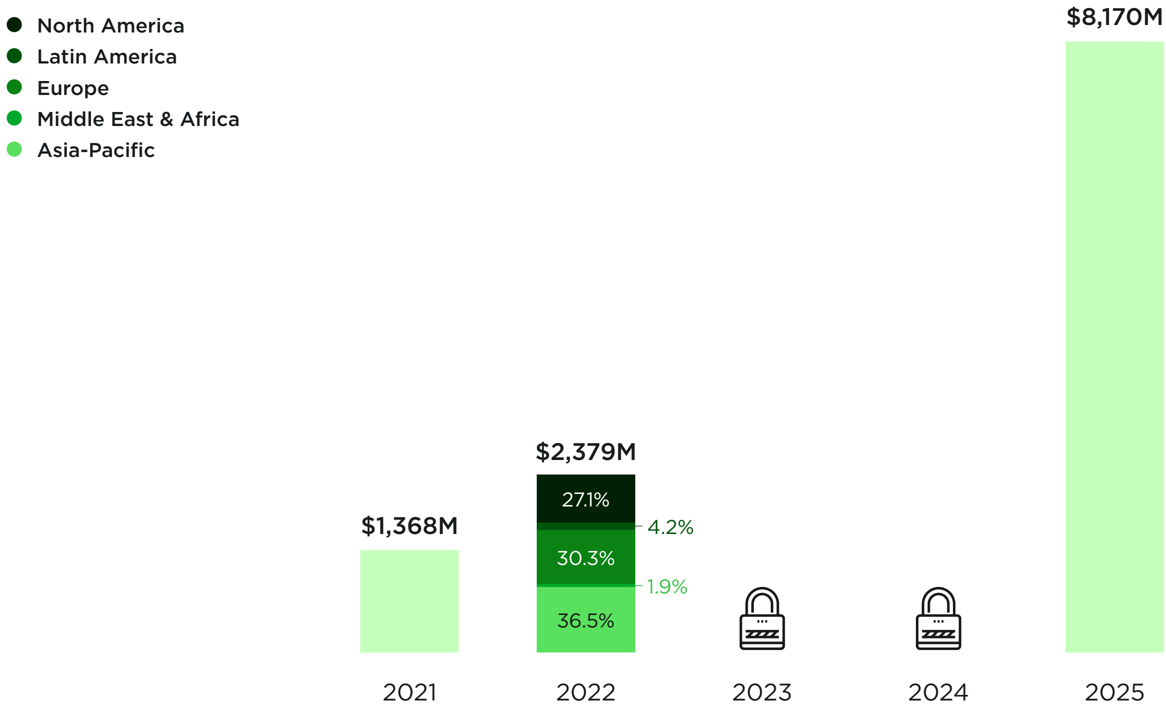
Base Scenario | 2021-2025



Note: Find this data split for 10 subregions and 36 markets in the dataset.

Cloud Gaming Revenue Forecast per Region

Base Scenario | 2021-2025



Note: Find this data split for 10 subregions and 36 markets in the dataset.

The cloud gaming market has matured significantly since the launch of the new wave of services in 2019. These are the key factors impacting the performance of the cloud gaming market:

- **I.** New cloud gaming services continue to launch, existing ones are expanding, and all of them are tweaking their marketing and business to better align with consumers' wants and needs.
- **II.** Cloud gaming's use cases continue to expand, offering something appealing to almost every player (across all platforms) while benefitting developers and publishers
- **III.** More accessible cloud gaming monetization improves adoption but could limit revenue potential
- **IV.** New AAA and upcoming cloud-enabled games are catalysts for cloud gaming's growth
- **V.** Supply constraints mean consumers are still struggling to buy the latest gaming hardware, nudging them toward cloud gaming

Full insights are included in the complete, paid version of this report: www.newzoo.com/cloud-report.

Optimistic Scenario

The optimistic scenario represents what the market could realistically look like if cloud gaming adoption increases faster than we anticipated in the base scenario. The following factors highlight how cloud gaming paying users and revenues could grow in even more favorable circumstances:

Pessimistic Scenario

While cloud gaming market's growth to date has been remarkable, and we expect an even more promising future ahead, we need to consider the possibility of cloud gaming struggling to expand and maintain its audience. As we have all learned these past years, unexpected things can happen.

Find the full optimistic and pessimistic market scenarios in the complete, paid version of this report: www.newzoo.com/cloud-report.

04.

Special Focus Topics

Special Focus Topic 1

Consumer Insights on Cloud Gaming – Summer 2022

Introduction & Methodology

Cloud gaming's potential is clearer than ever, not only among industry stakeholders but also in the minds of many gamers.

Over the next few pages, we report findings from our recent cloud gaming survey. This study, combined with some high-level findings from our annual Consumer Insights Games & Esports (CIGE) research, offers a unique consumer perspective on cloud gaming services in four key markets: the United States, Germany, Brazil, and China.

In June 2022, we screened almost 10,000 gamers in these markets to find a reliable sample of consumers who have a sufficient understanding of cloud gaming. They told us about their experiences using cloud gaming services and what they want and expect for the future. This analysis features two groups:

1. A sample of 1,324 current users of cloud services;
2. A sample of 1,086 recently churned users and non-users. This group has enough cloud gaming knowledge to explain why they churned or have yet to try cloud gaming services.

These sample sizes are fairly robust, allowing for a highly specialized and reliable study on consumer motivations and behaviors regarding cloud gaming. After all, the segment is young and has a low user base relative to other games market segments.

Key Takeaways

1. Consumer Research data indicates a solid year of growth for cloud gaming use
2. Cloud gaming services quickly become a favorite way to play (once consumers try them)
3. Users are consistent and clear about why they like to play via the cloud
4. Users want cloud gaming services to double down on the already appealing features
5. 5G can boost cloud gaming's growth and diversification

Find our full insights on this topic in the complete, paid version of this report: www.newzoo.com/cloud-report.

Special Focus Topic 2

Cloud Gaming's Technology Is the Backbone of the Metaverse

As gamers' play habits continue to evolve from static to interactive content, gaming is increasingly relying on cloud and edge computing services. Cloud gaming and cloud virtual reality are clear examples of this evolution, as both applications leverage the cloud to ensure a seamless and interactive user experience. What's more, developers are now using the hardware and software that powers cloud gaming to support the creation of the metaverse—a web of 3D, immersive, persistent, and interconnected worlds.

Several companies—an entire ecosystem of network infrastructure and service providers—are hard at work developing solutions to improve connectivity, with a special focus on solving the challenges of cloud gaming and maintaining shared experiences in the metaverse. Companies in this ecosystem are not only investing in hardware (where edge networks and edge computing are key focus areas), but they are also focusing on the software that optimizes connection paths, improves encoding, enables distributed computing, and more.

Two of the Metaverse's Biggest Challenges: Accessibility and Concurrent User Counts

Players of most online multiplayer games have long been split across multiple geographical servers or game instances to prevent network congestion and facilitate seamless, lag-free gaming sessions. For example, Fortnite's musical performances—despite attract

Find our full insights on this topic in the complete, paid version of this report: www.newzoo.com/cloud-report.

05.

Stakeholder Spotlight

In this chapter, we present exclusive interviews with key stakeholders pushing cloud gaming forward. Their unique perspectives, expertise, and combined global coverage represent most aspects of the cloud gaming business, including B2B, B2C, infrastructure, hardware, software, subscriptions, and more. The interviews offer a detailed look into each company's strategy, their biggest achievements and challenges, upcoming initiatives, and their expectations for cloud gaming's future.

Highlights

- **Xbox Cloud Gaming** is Microsoft's cloud gaming service, leveraging one of the most popular brands, ecosystems, and content subscriptions in the global gaming space. The interview covers how the service has evolved since its launch, cloud gaming's relationship with developers and players, and how Xbox expects cloud gaming to grow alongside its console business.
- **YuanJing** is Alibaba Group's cloud gaming branch and a leading platform-as-a-service (PaaS) provider in China. The company leverages Alibaba's vast resources and expertise to promote the development of cloud gaming. The interview covers YuanJing's foray into cloud gaming, the technology's infrastructure needs, the PaaS model in China, and more.
- **Well-Link** is a Chinese company at the forefront of graphics-as-a-service, best known for its collaboration with miHoYo on the cloud version of Genshin Impact in China. The interview spotlights this partnership, the habits of cloud gamers in China, and other Well-link innovations (including the development of its own cloud-native games).
- **Hadean** is a distributed computing cloud platform provider, building on its previous experience in cloud gaming. The company is now creating the foundations for metaverse applications (and other sectors). The interview explores how Hadean is expanding its technology's use cases to benefit developers and facilitate the metaverse.
- **Radian Arc** offers telecom operators a GPU-based edge computing platform without requiring capital expenditure, for running applications like cloud gaming, AI, and machine learning within carriers' networks. The interview covers Radian Arc's unique value proposition, diving into its partnerships, go-to-market strategy, and what's next for the company.

GAME PASS ULTIMATE

Xbox Cloud Gaming allows gamers to play hundreds of high-quality console games on devices they already own with Xbox Game Pass Ultimate, as well as free-to-play favorite, Fortnite. With a compatible controller or touch controls, players can access the games they love, with the people they want, anywhere across console, PC, mobile, select Smart TVs, and more. We spoke with Anna Vo, Senior Product Marketing Manager for Xbox Cloud Gaming, to find out more about Microsoft's cloud gaming service and goals.

Q. **Newzoo (NZ): A lot has happened since Xbox Cloud Gaming officially launched in 2020. How has the service changed since then?**

After launching in 2020, we have seen tremendous growth. Earlier this year, we shared that more than 10 million people around the world have streamed games through Xbox Cloud Gaming (XCG) as part of Xbox Game Pass Ultimate, and that number has been increasing significantly since then. In May, we also announced that we are expanding our business model to make cloud available to more people in even more ways, going beyond Xbox Game Pass to provide our first free-to-play title, Fortnite, available via XCG in partnership with Epic Games.

10M+

Over 10 million people using more than 6,000 types of devices have streamed games via Xbox Cloud Gaming, and that number is significantly growing.

元境

YuanJing is a cloud gaming service brand founded by Alibaba in 2020. It is a leading platform in China providing services for the development, operation, and growth of cloud gaming. The company offers a wide range of full-stack services, including cloud gaming infrastructure, development tools, innovative applications, and commercial platforms. YuanJing's goal is to help game developers and publishers quickly establish their cloud gaming products and services, grow, and promote industrial innovation, while keeping costs low. We spoke with Kuangye Guo, Alibaba YuanJing's CTO, to learn more about the company and its venture into cloud gaming.

Q. **YuanJing is a branch of Alibaba Group, one of the largest business groups in China and the world. For some context, what is YuanJing's role specifically?**

YuanJing's main product is a cloud gaming platform-as-a-service (PaaS), which our customers can use to build their own cloud gaming products. Notable examples include the cloud version of miHoYo's Genshin Impact (in partnership with Well-Link), Bilibili's mobile cloud gaming service via its game center, and Lingxi Games' Three Kingdoms Tactics cloud version. For the latter title, our solution allows players to instantly start playing via a tiny game client (while downloading the full game in the background).

YuanJing, which has created a cloud operating system, plays an important role in linking cloud-based development and game engines together. It integrates cloud computing platforms while also providing development tools for game makers. We aim to provide a developer-friendly platform that enables our customers to deliver the best cloud gaming experiences possible—as well as providing tools for the full game production lifecycle, including development, operation, and user growth.

Read the full interview in the complete, paid version of this report: ww.newzoo.com/cloud-report.

WELL-LINK

Well-Link is a China-based company at the forefront of Graphics-as-a-Service. It achieved sizable success with its cloud gaming business unit. The company provides one-stop cloud development and real-time rendering solutions for enterprise customers such as content providers, content operators, hardware manufacturers, and telecom service providers. We spoke with Eric Zhao, Head of Strategy & Investment at Well-Link, to find out more about the company.

Q. **Among other projects, Well-Link is best known for its partnership with miHoYo to create Genshin Impact's cloud version for the Chinese market. How did this collaboration start and what have been the main learnings?**

When miHoYo was preliminary testing Genshin Impact on mobile devices, it realized the majority of devices could not deliver a satisfying user experience due to the limitations of mobile phone chips (SoCs). Cloud gaming was a clear solution, so miHoYo looked for tech providers that could deliver good gaming experiences (1080p and 60FPS with no more than 10Mbps bandwidth) on lower-end devices. We ended up providing a better experience running the cloud version of Genshin Impact on an iPhone 6 than running the mobile app on an iPhone 13 Pro Max. This difference in performance was instrumental in getting Apple's permission to launch the world's first individual cloud game on the App Store in early 2022.

"We ended up providing a better experience running the cloud version of Genshin Impact on an iPhone 6 than running the mobile app on an iPhone 13 Pro Max."

Founded in 2015, Hadean is a venture-backed startup reimagining distributed, spatial, and scalable computing for Web 3.0 and the metaverse. Its distributed computing cloud platform provides the foundations for applications for the metaverse, enterprise organizations, and the defense sector. We spoke with Shany Elkarat, Chief Product Officer at Hadean, to understand how the technology can be used to support all kinds of massive concurrent 3D multiplayer experiences.

Q. The games market and cloud gaming are trailblazers for innovating in connectivity. What role does Hadean play here?

As a technology startup, we consider ourselves the "plumbing" of connectivity, the distributed computing layer that powers cloud gaming, the metaverse, and the evolution of Web 3.0.

Starting from cloud gaming, Hadean demonstrated how a distributed computing technology enhances the gaming experience and can allow us to go beyond the bounds of Web 2.0 implementations. We began by demonstrating how games and virtual events can be experienced by all users simultaneously, with our world record of 14,000 concurrently connected players in the same virtual space across 121 countries, back in 2019. However, we and our customers are well beyond metrics like the number of players and messages per second. The scalability subject is something we already unlocked and demonstrated three years ago.

14,000 concurrent game clients connected in a single global shard, in collaboration with CCP Games in 2019

Read the full interview in the complete, paid version of this report: ww.newzoo.com/cloud-report.

Radian Arc provides an infrastructure-as-a-service (IaaS) platform for running applications like cloud gaming, artificial intelligence, and machine learning within carrier networks. With a global team spanning North America, Europe, and Asia-Pacific, the company offers telecom operators a GPU-based edge computing platform without the need for capital expenditure. Given the combined power and efficiency of 5G and GPU edge, Radian Arc delivers a high-quality content and cloud gaming experience to consumers at a lower cost to telecom operators. To learn more about his company's approach to the cloud gaming market, we spoke with its CEO, David Cook.

Q. **Radian Arc's offering in the cloud gaming market is rather unique. Could you please begin by explaining who is your target audience and what you offer them?**

Our core value proposition is to bring our proprietary GPU Edge infrastructure to telecommunications companies, like phone and internet providers, and game publishers. Via cloud gaming, we can enable service providers to generate new revenue streams and increase their customer engagement, serving our primary audience (telcos) and their end users (gamers).

GPU Edge computing is the means to process data as close to the end user as possible; in this case, data is processed from within broadband and fiber networks, providing an advantage in the cost and quality of cloud gaming services. For gamers lacking access to traditional high-end gaming experiences on their own devices, cloud gaming is a much more affordable and—in many cases—equally high-quality alternative.

We can bring a wide range of gaming experiences, including cloud gaming subscription services (like Blacknut), desktop-as-a-service solutions (like Loudplay), esports platforms, play-to-earn, and deep integration with 5G-enabled hardware (like low-latency controllers and set-top-boxes). Our technology recreates high-end gaming experiences at a fraction of traditional hardware costs.

Read the full interview in the complete, paid version of this report: ww.newzoo.com/cloud-report.

06.

Terminology

Terminology

Average revenue per paying user (ARPPU): Revenue generated by all the paying users of a service or game, divided by the number of paying users, excluding any free trial period.

Cloud computing: Using centralized remote servers to process data rather than a local device.

Cloud gaming: The ability to play a game on any device without owning the physical hardware required to process it or needing a local copy of the game itself. The games are processed remotely on cloud or edge servers and streamed directly to a user's device. The player's input is continuously streamed back to these servers so the user can seamlessly play the game via the cloud.

Cloud gaming awareness: The share of people who know about cloud gaming. We determine this awareness via self-reported knowledge and a validation question about basic cloud gaming features.

Cloud gaming paying users: These users spend money on cloud gaming in at least one of the ways described as part of cloud gaming revenues (defined in the next entry). Our definition of paying users excludes those who only used a paid service during a free-trial period. It also excludes users whose spending does not contribute to our definition of cloud gaming revenues (see below).

Cloud gaming revenues: All consumer spending on cloud gaming services and games played via the cloud. This includes monthly fees (for subscription-based services), in-platform spend (which can be both full-game purchases and in-game transactions), and games bought with the sole purpose of being played via cloud gaming services.

Cloud gaming service: A service that enables cloud gaming (defined above). While it does not necessarily include a games library, it offers access to remote hardware. This differs from a standard games subscription service like Humble Choice, which provides access to software only.

Cloud gaming users: All users who have played a game at least once via a cloud gaming service in the past six months, regardless of whether they spent any money. May also be referred to as cloud gamers.

Cloud saves: Saved game files that are stored in the cloud; that is, not on the player's device or external physical storage (like a hard drive or SD card).

Cloud-enabled games: Games leveraging cloud gaming to achieve high performance or visual fidelity that is impossible without the cloud. Unlike cloud-native games (see the next entry), cloud-enabled games also have a non-cloud gaming component. Microsoft Flight Simulator, for example, uses the cloud to render a realistic version of our entire planet.

Cloud-native games: Games specifically built for cloud gaming that cannot be processed locally due to high technological requirements. The first wave of cloud-native games is in development, likely launching in the coming few years.

Communications Service Providers (CSPs): Companies that offer internet, telecommunications, media, entertainment, and other information-related services, often via a physical network. CSPs include Internet Service Providers (ISPs), cable companies, mobile carriers, and others. Examples include Vodafone, T-Mobile, and Verizon.

Cross-play: A feature that allows players on different platforms to play together. For example, Fortnite players on Xbox, PlayStation, Android, and PC can play together online. Naturally, this means players using different input methods (controllers vs. touchscreen vs. mouse and keyboard, for example) can be in the same lobby.

Cross-save: A feature that allows saved game files to be transferred between or accessed from different devices.

Digital revenues: Revenues generated by the sales of games or game-related content purchased directly from an online store, without a physical product being delivered. Digital revenues include in-game purchases, subscription revenues, and any additional downloadable content (DLC).

Edge computing: Like cloud computing, but the processing nodes are more widely distributed and physically closer to the user (compared to a remote cloud). The user's device may perform some of the processing.

Free-to-play (F2P) games: Games that are (legally) free to download and play, very often offering in-game spending opportunities.

Games-as-a-Service (GaaS): Providing game content or access to games on a continuous revenue model, e.g., via a game subscription service or a season/battle pass. Also referred to as live service games.

Game revenues: Consumer revenues generated by companies in the global games market, excluding hardware sales, tax, business-to-business services, advertising, and online gambling and betting revenues.

Gaming rig: A high-powered device used primarily for gaming, typically referring but not exclusive to desktop PCs.

Hardware components: All internal components that constitute finished electronic devices.

Internet Service Providers (ISPs): The gatekeepers of the internet and, therefore, cloud gaming. All consumer internet traffic passes through these providers. ISPs are a subset of Communications Service Providers (CSPs); however, both terms are sometimes used interchangeably due to the large overlap. Examples in the U.S. include Cox Communications and Comcast.

Network infrastructure: The back-end cloud infrastructure that connects data centers to end users' devices via network providers, including CSPs.

Pay-to-play (P2P) games: Games that must be paid for upfront or paid subscription-based games.

Peripherals: Gaming-related hardware products used for gaming, such as gaming mice, keyboards, headsets, controllers, or monitors.

Players or gamers: All people who play (digital) games on a PC, console, TV, and/or mobile device.

Serviceable obtainable market (SOM): The number of people who can realistically be considered potential users of a service. They must be somewhere where the service is available, and interested in it conditionally.

Subscription service: A service a user can access by paying for a pre-determined time period. In this report, the term is used in the context of a games subscription service, which offers access to software content without the hardware access that a cloud gaming service provides.

Newzoo's Gaming Personas

The All-Round Enthusiast: Consumers who love playing games, watching gaming video content, and owning gaming-dedicated hardware but do not quite reach the same levels as Ultimate Gamers in terms of hours or dollars spent.

The Backseat Viewer: Consumers who watch plenty of gaming video content/esports on Twitch and YouTube but hardly ever play games.

The Community Gamer: Consumers who never shy away from a community discussion and enjoy game-related podcasts, forums, news, and videos (as well as playing!).

The Lapsed Gamer: Consumers who are currently not game enthusiasts. They have played in the past but are now not engaging with gaming whatsoever. However, they can be reactivated; more than a quarter of them intend to play games in the foreseeable future.

The Mainstream Gamer: Consumers who are passionate about playing games but don't spend much money on the pastime. They enjoy high-quality game experiences, preferably free-to-play or discounted titles, and only spend on hardware when necessary.

The Popcorn Gamer: Consumers who play a little but enjoy watching gaming content far more.

The Solo Gamer: Consumers who tend to be more traditional and prefer playing alone. They lean toward single player adventures and immersive gaming, and are willing to spend a lot on peripherals and gear to enhance and maximize that immersion.

The Time Filler: Consumers who play games, typically on mobile, to pass the time. They do not see games as a major part of their lives and rarely spend more than a few hours gaming each week.

The Ultimate Gamer: Consumers who love all things gaming—playing, owning, and viewing—and dedicate much of their free time and disposable income to the pastime.

07.

About Newzoo

newzoo

Newzoo: The Global Standard for Games Data

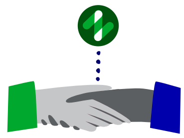
Our Services

Data Platform

The single destination for anyone with an interest in games. Broad and market-specific solutions, including our landmark reports.

Consumer Insights

The best way to understand consumer engagement and profile your target group, including our gamer segmentation.



Consulting

Custom projects that put our experience and expertise to work on strategic and financial challenges.

Newzoo Global Reports

With this comprehensive report and subscription, you can understand the latest trends in gaming, size your market, prioritize your game's global rollout, and set realistic growth targets.

Newzoo Platform

Every report subscription includes access to our easy-to-use platform so you can slice and dice the data in multiple ways.

Questions?

Email us at:
press@newzoo.com

Newzoo Consulting

Our expert games consultants can help you answer the big questions. Our team utilizes the full range of our games data solutions for bespoke projects, connecting insights to support your strategic business decisions.

Transaction Advisory
We support due diligence, M&A, IPOs, and more

Game Development Consulting
We use market expertise to make games better

Consulting Project Support
We advise companies on how to succeed in games

Strategic Advisory
We advise companies on how to succeed in games

Learn more: newzoo.com/consulting

Custom Consumer Research

Gather the consumer insights you need to power your decisions. Through our Global Gaming and Esports Panel, we offer you unrivaled reach and competitive pricing, combined with our years of expertise in gaming and esports research.

Product Testing
Test your game concept at critical stages of development

Brand Tracking
Monitor your own brand's performance

Profile Personas
Match the right personas to your brand

Community Research
Consult and profile your own community

60M+ Panelists

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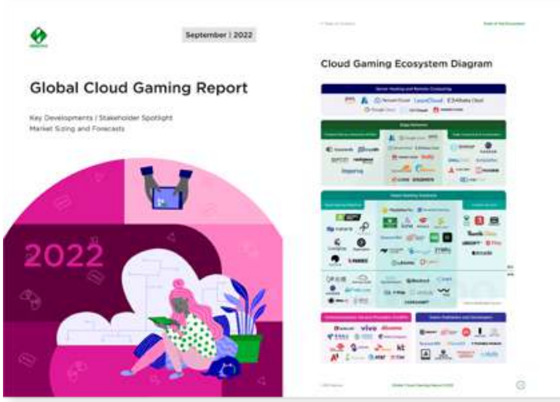
08.

Upgrade to the Full Report

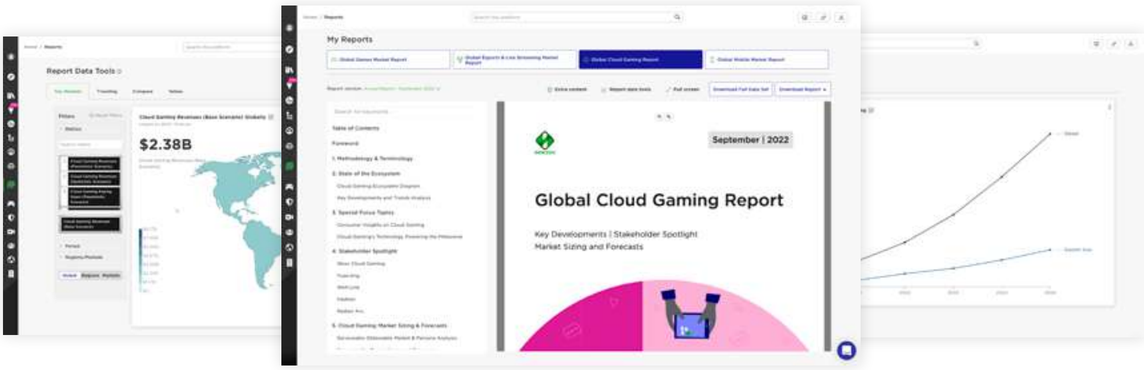
Upgrade to the Full Report

2022 Global Cloud Gaming Report

Looking to size, explore, and contextualize all things cloud gaming? Understand cloud gaming's impact and key market developments toward 2025. This subscription is sold only as an add-on to our Global Games Market Report.



The full, 88-page PDF



Access to all metrics via the Newzoo Platform

See the Premium Report

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Join the Top Game Developers, Hardware Manufacturers, and Telecom Companies Who Subscribe to Our Global Cloud Gaming Report

Comparison Table: Upgrade to the Full Report

	Free Report	Full Report
Report length	43 pages	88 pages
Mid-Year Update		✓
Access to all metrics via the Newzoo Platform		✓
Downloadable Excel Dataset		✓
Build your own graphs and views		✓
Full scope of market sizing and forecasts		✓
• Metrics	SOM, Paying Users, Revenues	SOM, Paying Users, Revenues
• Time	2021, 2022, and 2025	Full 2020 - 2025
• Geographical	5 regions for 2022, global for other years	10 subregions and 36 markets for all years
• Scenarios	Base	Base + Optimistic + Pessimistic
• Scenarios Comparison & Full Drivers Analysis		✓
• Newzoo Personas	None	Full analysis of SOM and Paying Users
Full access to 6 global trends		✓
• Cloud Gaming's Role in the Future of Game Hardware	Title	Full 2-page trend
• Cloud-Enabled AAA Games	Title	Full 1-page trend
• Seamlessness and Removing Friction	Title	Full 1-page trend
• Xbox and Why Positioning Matters	Title	Full 1-page trend
• Bridging the Gap Between Video and Games Content	Title	Full 2-page trend
• Blockchain Gaming Might See Its Future in the Cloud	Title	Full half-page trend
Full access to 2 special focus topics		✓
• Consumer Insights on Cloud Gaming – Summer 2022	Intro + key headlines	11 pages + 10 charts and tables with exclusive data
• Cloud Gaming's Technology Is the Backbone of the Metaverse	Preview	Full 4-page deep dive
Full access to Stakeholder Spotlight interviews		✓
• Xbox Cloud Gaming	Preview	Full 4-page interview
• YuanJing	Preview	Full 6-page interview + exclusive datapoints
• Well-Link	Preview	Full 5-page interview + exclusive datapoints
• Hadean	Preview	Full 4-page interview
• Radian Arc	Preview	Full 4-page interview
A weekly Analyst Feed on the latest developments in the global games market including esports, live streaming, cloud gaming, metaverse, and others.		✓
Access to many more unique insights through our platform.		✓

See the Premium Report

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