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Delivering exceptional gaming experiences with AWS

How AWS enables faster, lower-cost game development.

Quick jump

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Accelerating game innovation

Technology is transforming the gaming industry, enabling game developers to push the boundaries and create next-level gaming experiences. Instead of dedicating time and effort to supporting infrastructure, developers are keen to build fun, innovative games that delight players. But in order to do so, they require access to servers that scale with tens of millions of players globally at a low cost. They also require the capacity to optimize player lifetime value (LTV) with databases that can process terabytes to petabytes of ever-changing data, analytics solutions that can access that data with millisecond latency, and machine learning (ML) that can translate insights into new, immersive gameplay features. To realize this transformation, developers need purpose-built services and solutions that can help move on-premises workloads to the cloud, onboard diverse talent quickly from anywhere in the world, and enable remote and distributed game development to get to market faster.

Why build with the cloud?

Scalability

Accommodating fluctuating player demand is essential for game developers. Deliver exceptional gaming experiences by utilizing the cloud to create a high-performance backend that automatically scales without on-premises hardware management or the need to provision your own computing resources.

Low-risk experimentation

Cloud-based servers can be easily deprovisioned, allowing you to experiment often and fail fast if a game idea falls flat. With serverless managed services, you can experiment and iterate even faster.

No upfront costs

Instead of investing upfront in expensive computing infrastructure and spending time and resources to procure it, the cloud saves you costs with flexible pay-as-you-go pricing. Pay only for cloud-based resources you use rather than incur ongoing costs for on-premises servers that need maintenance and may lie dormant.

Better player experiences

Spend less time building infrastructure and more time developing compelling gameplay. Without the need to provision, operate, and maintain servers, you can focus on what matters most—creating a game players want to play.

Faster launch

Spin up computing resources where you need them in minutes with on-demand cloud infrastructure. Improve your agility to deploy games and scale to meet player demand. Plus, reduce latency by deploying server instances in different regions across the globe.

Why AWS?

Amazon Web Services (AWS) is the world's most comprehensive and broadly adopted cloud platform:

- More than 1 million active customers across 190 countries
- Most of the largest publicly traded game companies use AWS
- 200+ services[1] to support virtually any cloud workload
- 26 AWS Regions, 84 AWS Availability Zones, 17 AWS Local Zones, 300+ AWS edge locations[2]
- More than 3,000 features and services added in the last year
- Average infrastructure cost savings of 31 percent
- 62 percent productivity boost for IT staff[3]
- 290+ game development partner solutions
- Support for 98 security standards and compliance certificates
- All 117 AWS services that store customer data offer the ability to encrypt that data
- Amazon has a target to be powered with 100 percent renewable energy by 2030 and is on a path to reach that goal early by 2025

[1] Cloud Computing with AWS
[2] AWS Global Infrastructure
[3] Carvalho, L., Marden, M., "Fostering Business and Organizational Transformation to Generate Business Value with Amazon Web Services," IDC, February 2018

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Functionality

AWS has continually expanded its services to support virtually any cloud workload and now has more than 200 fully featured services for compute, storage, databases, networking, analytics, machine learning, artificial intelligence (AI), the Internet of Things (IoT), mobile, security, hybrid, virtual and augmented reality (VR and AR), media, and application development, deployment, and management.

Proven expertise

AWS has unmatched experience, maturity, reliability, security, and performance that you can trust for your most important applications. For more than 16 years, AWS has been delivering cloud services to millions of customers around the world, running a wide variety of use cases. AWS has the most operational experience, at greater scale, of any cloud provider.

Customer and partner community

AWS has the largest, most dynamic community, encompassing millions of active customers and tens of thousands of partners globally. The AWS Partner Network (APN) comprises more than 100,000 partners from more than 150 countries. This includes more than 290 game development partners, with almost 70 percent headquartered outside of the United States.

Global infrastructure

AWS spans 84 AWS Availability Zones within 26 geographic regions, with announced plans for 24 more AWS Availability Zones and eight more AWS Regions in Australia, Canada, India, Israel, New Zealand, Spain, Switzerland, and the United Arab Emirates.

Security

AWS supports 98 security standards and compliance certifications, more than any other cloud provider, including PCI-DSS, HIPAA/HITECH, FedRAMP, GDPR, FIPS 140-2, and NIST 800-171, helping satisfy compliance requirements for nearly every regulatory agency around the globe. All 117 AWS services that store customer data offer the ability to encrypt that data.

Building toward sustainability

According to a 2021 report by 451 Research, moving to AWS is more sustainable than on-premises infrastructure, as the scale of AWS allows it to achieve much higher resource utilization and energy efficiency than the typical on-premises data center. Amazon is on a path to powering its operations with 100 percent renewable energy by 2025—five years ahead of its original target of 2030. In 2019, Amazon co-founded The Climate Pledge—a commitment to be net-zero carbon across our business by 2040, 10 years ahead of the goal set by the Paris Agreement.

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Studio transformations with AWS for Games

To ensure that your cloud transformation is smooth and seamless, Amazon offers AWS for Games. It aligns purpose-built game development capabilities, including AWS services, AWS solutions, and AWS Partners. AWS for Games supports six solution areas to help developers build, run, and grow their games: cloud game development, game servers, live operations, game analytics, game ML and AI, and game security. These solutions simplify how game customers use AWS, making it easier to select the right tools for their desired use cases. And they reduce the amount of resourcing and investment required to adopt the cloud and achieve faster time to value.

AWS brings 15 years of experience supporting transformation for leading game developers such as Behaviour Interactive, Epic Games, Gameloft, Gearbox Software, KIXEYE, The Pokémon Company International, Redhill Games, Riot Games, Sony Interactive Entertainment, Wemade Play, Ubisoft, and Warner Bros. Games. This initiative accelerates deployments across solution areas by connecting developers with industry-leading AWS Partners such as AMD, AppsFlyer, Beamable, Databricks, Epic Games, Incredibuild, NVIDIA, Parsec, Perforce, Slalom, Snowflake, and Teradici, as well as dedicated AWS industry specialists and AWS Professional Services teams.

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AWS for Games solution areas

BUILD

Cloud game
development

RUN

Game servers

Game security

GROW

Game analytics

LiveOps

AI & ML

USE CASES AND SOLUTIONS

Workstations
Build pipelines
Version control
3D world building

Hosting session-
based games

Global game
infrastructure

Defend against
DDoS attacks

Protect against
data breaches

Game Services
for Live Ops

Centralized
game analytics

Community
health/toxicity

Smart acquisition
and retention

Cloud game development

Leverage **cloud game development** solutions to create flexible remote studios and deploy GPU-powered workstations that allow artists and designers to work on multiple large files in the cloud. These solutions also make it easy to build secure distributed development pipelines, reducing the security risk of using distributed hardware and sharing intellectual property (IP) across remote employee environments. For example, **Amazon Elastic Compute Cloud (Amazon EC2) Mac** instances are designed for developers to build and test iOS and macOS games. With more than 500 generally available Amazon EC2 instances, AWS offers more capacity than any other cloud provider.

By migrating its internal build pipeline from on premises to AWS services, including Amazon EC2 and **Amazon Simple Storage Service** (Amazon S3), **Epic Games** drastically improved development iteration times to continuously deliver fresh content to players.

> **"We recognized some of the AWS instance types that we now had available to us resulted in significantly better performance. For our client compiles, we were able to reduce those times by 135 minutes, or 75%, which helps us iterate quicker."**
>
> – Alex Carberry, DevOps Manager: Unreal Engine Infrastructure, Epic Games

> **"Gaming is a massive and increasingly competitive market. As such, it is becoming more and more important for creators to optimize build acceleration in order to accelerate production and delivery without compromising on performance. As more and more developers move to the cloud, Incredibuild are thrilled to provide support for AWS for Games as they continue to provide their users with leading solutions – resulting in faster builds, less cloud guesswork, increased savings and ultimately, even more exciting games."**
>
> – Tami Mazel Shachar, CEO, Incredibuild

> **"Through our work with AWS for Games, developers worldwide can now enjoy Parsec's low latency experience combined with AWS's extensive suite for building and running games in the cloud."**
>
> – Benjy Boxer, Co-Founder & GM, Parsec

Purpose-built services to help you build your game with the cloud

Amazon and AWS for Games offer purpose-built services and solutions to support developers at every stage. Whether you are at the build, run, or grow cycle, these services and solutions are constantly evolving to ensure access to the tools needed to innovate and scale.

Amazon Nimble Studio

Amazon Nimble Studio accelerates content production in the cloud with access to virtual workstations, high-speed storage, and scalable rendering across the AWS global infrastructure. Using Amazon Nimble Studio, a virtual game studio can be created in hours, and your team can rapidly onboard and collaborate with artists globally, scale capacity on demand, and create content faster and more cost-efficiently.

AWS GameKit

An open-source solution, **AWS GameKit** helps developers deploy and customize game backend features directly from a game engine with just a few clicks, reducing the integration of cloud-based services from weeks to days. AWS GameKit includes the source code for all the underlying game features to demonstrate how AWS services work together. Developers can then customize the defaults used in a game feature.

Open 3D Engine (O3DE)

A modular, open-source, cross-platform game engine, **O3DE** is available for free under Apache License 2.0 and is built to power AAA games, cinematic 3D worlds, high-fidelity simulations, and everything in between.

Game servers

Game server solutions allow teams to run games on the cloud at global scale with secure, resizable compute capacity while leveraging the AWS network, resulting in uninterrupted player experiences at the lowest cost. Whether using a managed service like **Amazon GameLift** with **Amazon GameLift FlexMatch** or through Windows, Linux, and Arm-based compute options, you can deploy session-based game infrastructure. This delivers globally distributed capacity and provides reliable low-latency experiences for players while elastically scaling to match player traffic.

Leveraging services including Amazon GameLift, **Amazon DynamoDB**, and **Amazon ElastiCache**, the *Roller Champions* development team at **Ubisoft** is shifting its focus away from ongoing operational management to creating online features and gameplay for its players.

"We're using AWS, leveraging a lot of AWS services, which has cut down a lot on human cost as well as operational costs… We don't need to have months of preparation of allocating servers or getting the bare metal servers in for databases."

– Naomi Barnes, Live Operations Manager, Ubisoft

"Ubitus has leveraged AWS's GPU capabilities to partner with IO Interactive to release a cloud version of Hitman 3 to a highly portable gaming device. With the introduction of Amazon EC2 G4ad AMD instances, we were able to fit up to 50% more concurrent streams per instance without changing any code allowing us to optimize our costs. The lower cost structure enables us to bring more games such as Hitman 3 to gamers globally."

– Wesley Kuo, CEO, Ubitus

"We are excited to be part of the AWS for Games initiative to further revolutionize how players and developers create, publish and consume gaming experiences. At **EPAM**, we believe in the power of open platforms. Partnering with AWS, we have helped many of the world's leading gaming companies transform their cloud infrastructures, deliver exceptional seamless user experiences, and develop social services on a scale of 500M+ players."

– Vitalii Vashchuk, Director, Head of Gaming Solutions, EPAM Systems, Inc.

Game security

With more games built live and continuously updated, attacks and hacks are expected. These can not only cripple a game but also create bad player experiences. AWS services for **game security** include **AWS Shield**, which protects against distributed denial of service (DDoS) attacks, and **Amazon GuardDuty**, which monitors for malicious activity and anomalous behavior, ensuring players have fun, safe experiences.

EVE fraud system is a big data platform built by **Sony Interactive Entertainment** to aggregate transactional activity of users, resulting in substantially increased approvals with no increase in declines or chargebacks from banks.

> **"We were able to reduce our latency from the current provider, which had taken about 2 seconds to assess fraud and risk, down to under 200 milliseconds, which is a pretty amazing feat. We are also able to improve our risk decline and accuracy, reducing false positives allowing more 'good' customers to buy the things they wanted when they wanted to buy them, which is creating that world-class experience."**
>
> – Eric Krauss, Senior Engineering Manager, Sony Interactive Entertainment

Purpose-built services to help you run your game at scale

Amazon GameLift

Amazon GameLift is a dedicated game server hosting solution that deploys, operates, and scales cloud servers for multiplayer games. Whether you're looking for a fully managed solution or just the feature you need, Amazon GameLift leverages the power of AWS to deliver the best latency possible, lower player wait times, and maximize cost savings. Amazon GameLift features include Amazon GameLift FlexMatch for connecting up to 200 players in a single game session on the lowest latency server instance available at a cost savings of up to 70 percent less than using on-premises resources, and **Amazon GameLift FleetIQ**, which optimizes the use of low-cost **Amazon EC2 Spot Instances** to deliver inexpensive, resilient game hosting for your players.

Game analytics

Game analytics solutions allow teams to configure and deploy purpose-built analytics pipelines. These leverage managed infrastructure components to reduce operational overhead and elastically scale to match changes in data traffic.

Using AWS services such as **Amazon SageMaker**, **Amazon Redshift**, and Amazon S3, **WB Games** is able to capture, ingest, and analyze insights to help developers become more opportunistic and agile with their approach to storytelling.

> **"With the accessibility and variety of tools we can get on AWS, we can go from a business challenge to an idea prototype very, very quickly... having all of our data accessible in Amazon Redshift for analysis means that if someone's curious, they can write a query and they get a result back."**
>
> – Shawn Connor, Director, Data Science, WB Games

> **"Personalization, driving smarter monetization, and executing with agility are the top priorities for every game tech company across the globe. Databricks is proud to partner with AWS for Games to unlock the value of big data, AI, and analytics for game tech platforms including joint customers like Riot Games, Sega, and WildLife Studios."**
>
> – Steve Sobel, Global Industry Leader – Communications, Media & Entertainment, Databricks

> **"With unparalleled scale and reliability, AppsFlyer and AWS enable gaming customers to attract, retain, and engage high-value players while ensuring data privacy and compliance. We deliver real-time insights to gaming giants such as FunPlus, Playrix, and Playtika so they can make good choices for their businesses."**
>
> – Ziv Peled, CCO, AppsFlyer

Live operations

Live operations solutions allow teams to configure and deploy game service functionality to reduce development time. These solutions can scale with player demand while improving the experience and increasing revenue through monetization and player acquisition and retention.

By migrating to AWS, **Wemade Play** (formerly SundayToz) was able to optimize costs while still achieving scalability and stability. Wemade Play can now focus on maximizing the user experience by posting a regular server maintenance notice in the game rather than stopping the service.

"With only 20 server developers, we have been able to develop games, address server and infrastructure issues, and operate our services stably."

– Chang-myeong Lee, CTO, Wemade Play

"We're thrilled to work with AWS…together, Beamable and AWS provide a best-in-class platform for building amazing live games. Studios get AWS's renowned scalability combined with Beamable's workflows, industry-leading admin tools, and powerful serverless computing. This hyper-efficient platform enables developers to build fast and orchestrate great experiences for players."

– Jon Radoff, CEO, Beamable

Game AI and ML

Using machine learning or artificial intelligence, community health solutions allow teams to identify different player cohorts within a game community and detect toxic behavior and interactions to improve player experience. You can also use **AI and ML technology** for smart acquisition and retention solutions that allow teams to classify player populations based on game interactions. This can determine the course of action to take to increase acquisition and retention and optimize player long-term value.

"For gaming companies, building the best player experience, free from toxic behaviors, will be the key deciding factor in which platforms player communities choose. Spectrum Labs is proud to offer Guardian for Games to gaming companies and developers in cooperation with AWS."

– Justin Davis, CEO & Co-Founder, Spectrum Labs

"At Voodoo, we need to keep a millions-and-growing player base actively engaged. By standardizing our machine learning and artificial intelligence workloads on AWS, we're able to iterate at the pace and scale we need to continue growing our business and engaging our gamers. Using Amazon SageMaker, we can decide in real time which ad should be shown to our players, and our endpoint is invoked over 100 millions times by over 30 millions users daily, representing close to a billion predictions per day. With Amazon machine learning, we were able to put an accurate model into production in less than a week, supported by a small team, and have been able to build on top of it continuously as our team and business grow."

– Aymeric Roffé, CTO, Voodoo

Purpose-built services to help you grow your player

Amazon GameSparks

Amazon GameSparks is a fully managed service built on AWS that empowers simpler creation, management, and scaling of backend game features, so you don't have to think about infrastructure, reducing time to market.

Amazon Luna

Cloud gaming service Amazon Luna lets gamers play on devices they already own, allowing more people to discover and interact with your game across platforms.

Amazon Twitch

With **an average of 31 million visitors** tuning in every day, live streaming service Amazon Twitch provides a dynamic avenue for building your influencer network and promoting your game. In 2021, 1.3 trillion minutes of content were watched on Twitch, ranging from live video game streams to esports competitions and beyond.

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AWS for Games customers

bE HAVIOUR

EPIC GAMES

GAMELOFT

gearbox software

KIXEYE

RIOT GAMES

redhill GAMES

The Pokémon Company INTERNATIONAL

Sony Interactive Entertainment

UBISOFT

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WEMADE PLAY

AWS for Games partners

Ready to level up?

To start building next-generation gaming experiences, visit **AWS for Games**.