Cloud Gaming

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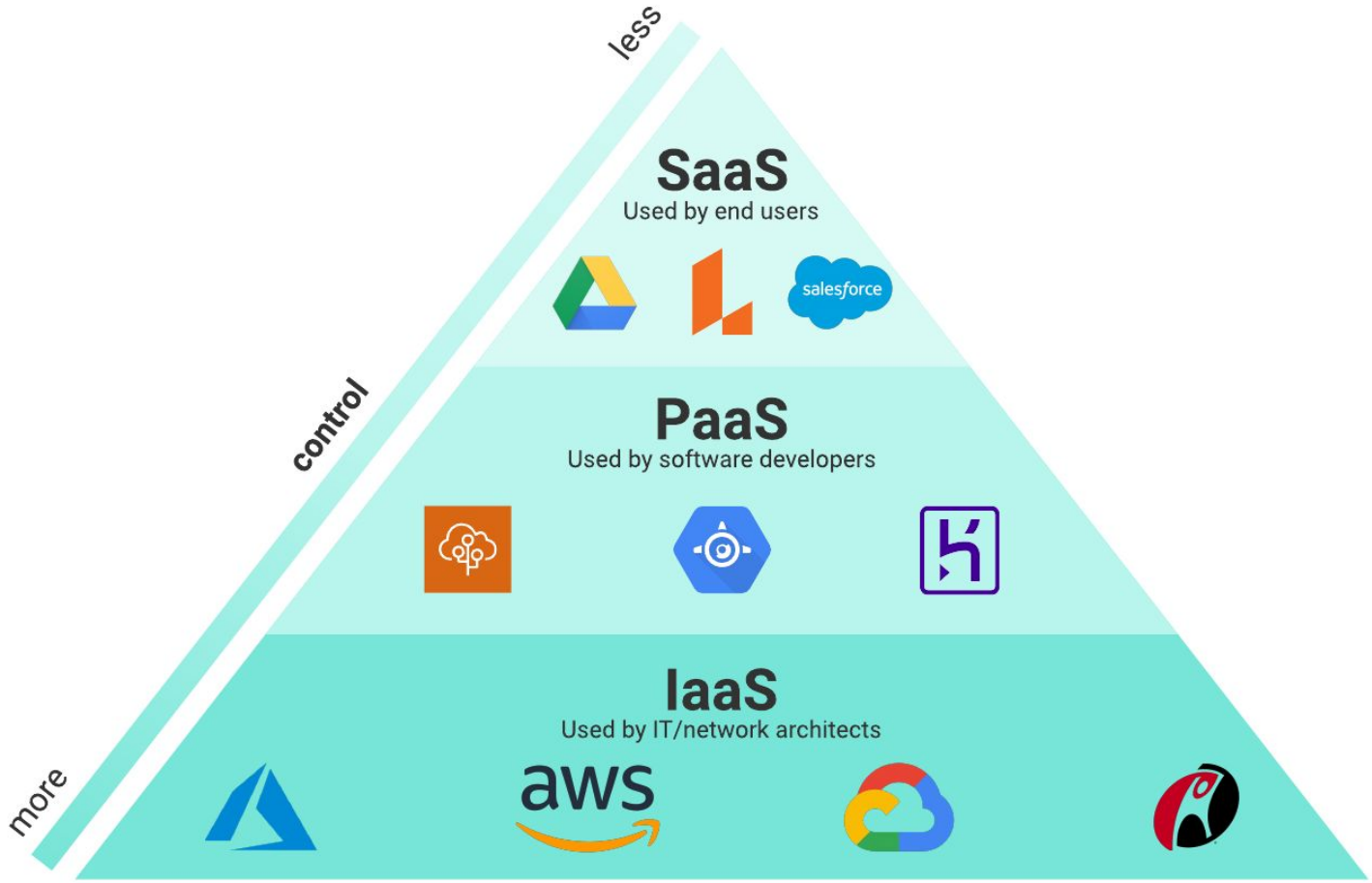
What is Cloud Computing

- general term for anything that involves **delivering hosted services over the internet**.
- These services are divided into three main categories or types of cloud computing: **infrastructure as a service (IaaS)**, **platform as a service (PaaS)** and **software as a service (SaaS)**.
- A cloud can be **private** or **public**.
- Private or public, the goal of cloud computing is to provide **easy, scalable access to computing resources and IT services**.


less
control
more
SaaS
Used by end users
salesforce
PaaS
Used by software developers
IaaS
Used by IT/network architects
aws

What is Cloud Gaming ?

- Aka gaming on demand or gaming-as-a-service.
- is a type of online gaming that runs video games on remote servers and streams them directly to a user's device.
- It contrasts with traditional means of gaming, wherein a game runs locally on a user's video game console, personal computer, or mobile device.
- operate in a similar manner to remote desktops and video on demand services.
- games are stored and executed remotely on a provider's dedicated hardware, and streamed as video to a player's device via client software.
- The client software handles the player's inputs, which are sent back to the server and executed in-game.

“CLOUD GAMING BASICALLY SAYS WE ARE GOING TO TAKE ALL OF THE PROCESSING AND ALL OF THE VISUALIZATION [OF GAMES], AND DO IT REMOTELY.

YOU CAN NOW ACCESS INFRASTRUCTURES AND CAPABILITIES FAR IN EXCESS OF ANYTHING YOU COULD PHYSICALLY PUT IN YOUR ROOM.”

GaaS - Gaming as a Service

- Games as a service (GaaS) represents providing **video games** or **game content** on a **continuing revenue model**, similar to software as a service.
- Games as a service are ways to **monetize** video games either after their initial sale, or to support a free-to-play model.
- Games released under the GaaS model typically receive a long or indefinite stream of monetized new content over time to encourage players to continue paying to support the game.
- This often leads to games that work under a GaaS model to be called "living games", "**live games**", or "**live service games**" since they continually change with these updates.

History of Cloud Gaming

- The first demonstrated approach of cloud gaming technology was by a Finnish startup "**G-cluster**" in 2000.
- Video game developer **Crytek** began the research on a cloud gaming system in 2005.
- Entrepreneur Steve Perlman revealed **OnLive** at the March 2009 Game Developers Conference.
- another startup **Gaikai** was announced by David Perry in 2010.

History of Cloud Gaming

- **Sony acquired OnLive** in April 2015, only to shut it down four weeks later.
- Despite OnLive's flameout, Sony debuted **PlayStation Now** in beta form in July 2014.
- **Nvidia** and **Google** began exploring cloud gaming services of their own.

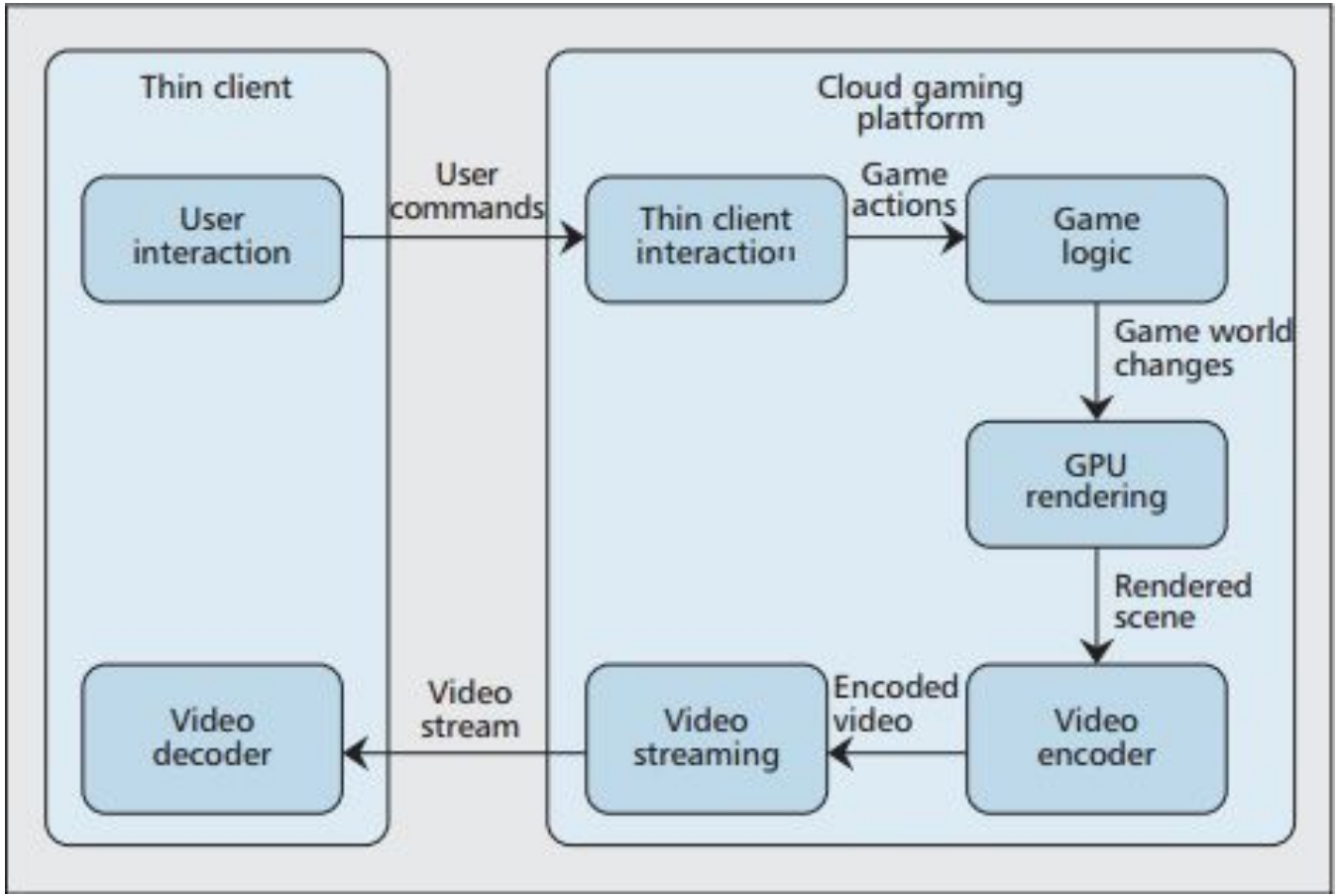
Google

NVIDIA®

Why is Cloud Gaming popular now?

- Streaming services such as YouTube, Netflix, Hulu and many others are just as popular than non-streaming counterparts.
- The phone in your pocket is an instant portal to far more video content than you could ever hope to watch in a lifetime -- so why not bring that technology to the gaming world?
- now internet speeds are faster and more accessible to larger groups of people and hardware is good enough to deliver high-fidelity content.j
- As internet speeds continue to get better and cheaper, so too will cloud gaming.

How Cloud Gaming Works



Cloud Gaming Services

- In 2013, Nvidia began testing a service that allowed users to stream games they had already purchased on storefronts like Steam.
- The service, later renamed **GeForce Now**, worked on Macs, Chromebooks, Windows PCs, Android TV, and mobile devices.
- Google launched **Stadia** in November 2019.
- GeForce Now exited beta in February 2020.
- Microsoft rolled out **xCloud**, Amazon announced **Luna**.

XBOX Game Pass & Playstation NOW

- **Xbox Game Pass** and **PC Game Pass** are video game subscription services from **Microsoft.**
- **PlayStation Now (PS Now)** is a video game subscription service developed by **Sony Interactive Entertainment.**

Google Stadia & Amazon Luna

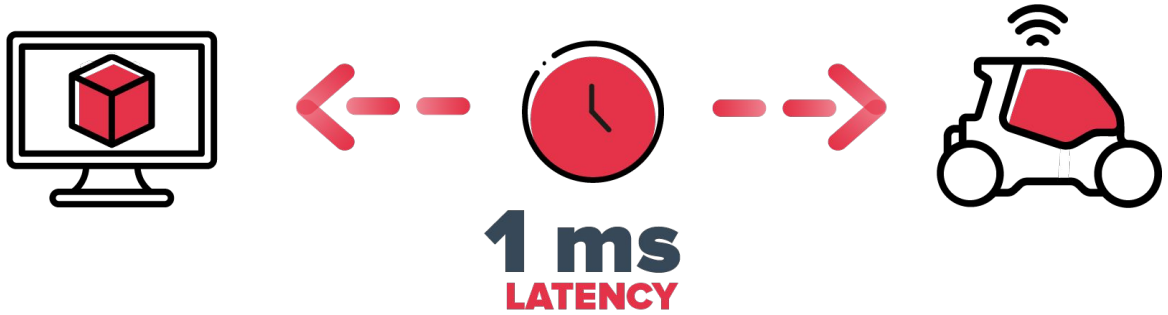
- **Amazon Luna** is a cloud gaming platform developed and operated by Amazon.
- Luna was announced on September 24, 2020.
- **Stadia** is a cloud gaming service developed and operated by **Google**.
- Known in development as **Project Stream.**

GeForce NOW & Shadow

- **GeForce Now is the brand used by Nvidia for its cloud gaming service. The** Nvidia Shield version of GeForce Now, formerly known as **Nvidia Grid**, launched in beta in 2013.
- **Shadow.tech** is a Cloud gaming service developed by the French company Blade (Acquired by OVHcloud).
- the service is **not limited** to running Video games, as Shadow.tech provides a **remote access** to a complete PC infrastructure.

Advantages

- Excellent **compatibility** across devices.
- Significant **reduction in cost**.
- Access to a **multitude of games.**
- Prevention of **Piracy.**
- **Security**.



Disadvantages

- **Video Compression** - the gameplay "video" you receive from a cloud-gaming service is compressed. It won't be as sharp and high-detail as what could be rendered by a high-end gaming PC.
- **Bandwidth** – Cloud gaming services require a **large amount of bandwidth**.
- **Latency** – Reaction time is faster when your mouse movement just has to reach your computer than when it has to travel over an Internet connection, be rendered and compressed, and then travel back to you.
- Cloud-gaming services will **always have more latency than powerful local hardware**.
- **DRM - Digital Rights Management** is copy protection and/or technical protection measures employed by companies in an attempt to limit the manipulation**.**

Conclus'i'on

- Big Players in Software and Infrastructure shows special interest in Cloud Gaming.
- NVIDIA's internal tests show that it can significantly mitigate the latency introduced in current cloud gaming systems.
- 5G,Enhanced Fiber Connections will increase Network Performance , decrease Latency and Improve Cloud Gaming Performance.
- Current Hardware Shortages and GPU/Storage Crisis will turn many gamers into Cloud gaming services.

Happy Gaming