

5G TECHNOLOGY USE CASE 2021

Cloud Gaming | Enhanced Mobile Broadband

What is Cloud Gaming?

Cloud gaming allows the player to play a game that is hosted online without the need to download the game. The norm has been for players to have their games on their local device and, while occasionally they may connect to the game server to access some game services, the game remained pretty much on their device, be it a mobile phone or game console. Cloud gaming is one application of cloud computing: an organization of resources that permits the sharing of resources by serving the applications over the internet. The end user can even access a service or application that is on a platform different than their own because the application hosting, storage and computation is done on the central cloud server rather than on the individual device.

The gaming market is expected to be worth over USD189 billion in 2022 from USD 149 billion in 2019. At USD68 billion (9.7 percent year on year growth), mobile (tablet and smartphone) accounted for 46 percent of the games market in 2019. This trend is likely to continue in 2022, especially so with the deployments of 5G networks and devices.

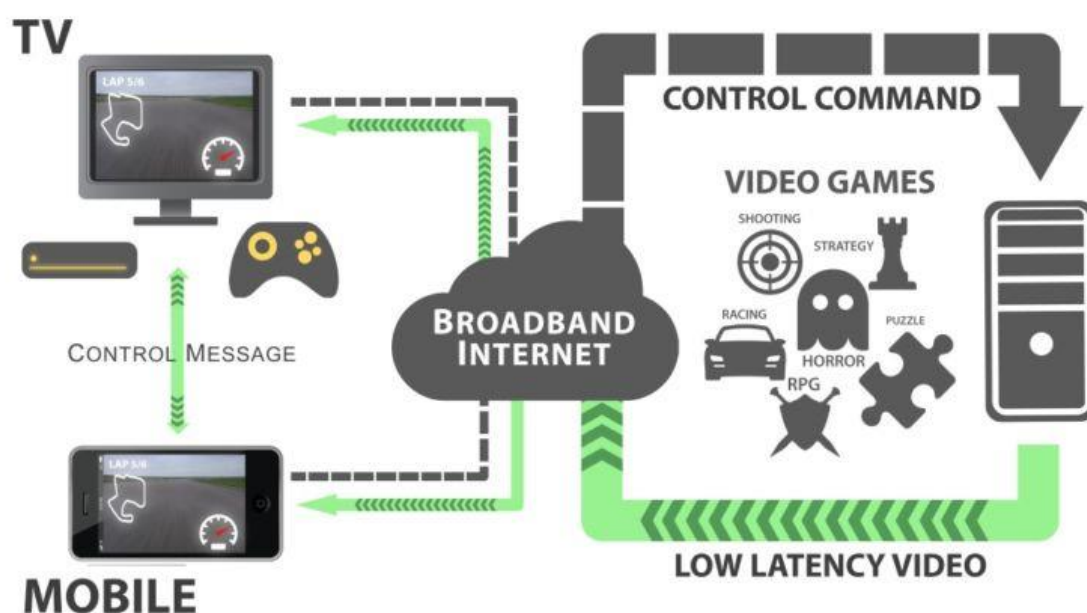


Image Source: Arts Technica

Why 5G Cloud Gaming?

As games have gotten much richer and with more people than ever having mobile devices, it is time that games are no longer tied to a platform. This would open up gaming to a much wider audience. By having the game hosted at a central game server nearer to the gamers, the players can use their generic platform—be it a computer or phone—to access the game.

Games are also a powerful social connector. Multi-player games require interactions with people from across the world and yet the experience needs to feel in the present and local. To update the game state (for example, move a character) across many devices fast enough requires the kind of

low-latency and data rates that 5G provides. 5G offers latency even lower than five milliseconds, allowing for an unparalleled real-time experience: once a gamer commands an action, it happens almost immediately.

Cloud gaming requires high bandwidth for downloading the experience as well as uploading the game state command or even streaming videos of the players. The bandwidth estimates can be as high as 35 Mbps, which can easily make a 1 TB monthly data plan insufficient for the avid gamer.

What Problem is 5G Cloud Gaming Solving?

Cloud gaming requires fast, low-latency and reliable connection between the game player and the game host. It needs to appear as though the computation and rendering are done on the local devices. If there is a lag between a user commanding an action and the game state changing, the whole experience is marred; in some competitive gaming cases actual losses may be incurred by the players.

5G will provide the necessary bandwidth to make cloud gaming smooth.

Who Benefits From 5G Cloud Gaming?

For the game maker, they do not need to build for as many platforms. Since the game is hosted on the developer's server (or servers rented by the developer), the developer can deliver the experience to whatever platform such as a mobile platform. All that is required is a robust connection to the server to allow for seamless interaction with the game. Therefore the developer can access a much, much wider audience without the great expenses incurred in order to customize the game for the many platforms! With people on the move most of the time, making their mobile device the new gaming console opens up untold numbers of players.

Conversely, the game player can now enjoy game experiences that they may not have the computing resources or platform for. With a mere smartphone, they can let the central server do the heavy computing and the game player simply receives the next game frame! But what the player needs is of course a low latency, reliable network: the player wants to see their actions reflect in the game state almost instantaneously.

For the game player, they now have a much larger game palette to choose from: games on older devices which the player may no longer have or next-generation platforms that they have not yet bought. With 5G and game servers close to the player, the player will not need to buy new devices. It will be cheaper for the player because they will not need to continuously buy new or upgrade their gaming systems in order to enjoy newer experiences.

The 5G network operator naturally benefits from all this! Two sample ways are: revenue from the increase in the data consumed by gamers and the potential wholesale selling of connectivity service to gaming company. When an individual gamer is using upwards of 1 TB to enjoy their game, it sure provides a new and bigger revenue segment. With many gamers more gamers coming online—as a result of, among other things, the low barrier to entry if one does not need a game console—delivering video game frames is going to be a key way for generating revenue.

The operator may also partner with the cloud gaming company. The gaming company then offers its users a service bundle comprising of connectivity and the game, ensuring a similar experience across most of the users. The logistics of dealing with one big client—the gaming company—rather than many individual gamers should be easier. It is also becomes easier for the gamer to purchase a bundle that includes a gaming service and this ease will attract new players.

Key Takeaways and Challenges

5G will allow the following benefits:

1. The existing gamer does not need to get the hardware for a specific game or game service, since most computations will be done by the central game server. Conversely, game

developers can create their game as though targeting one platform and yet reach all platforms. The development cost and the equipment cost are reduced for the developer and player respectively.

2. New players will be activated as there will be less need to buy a special console or high end device for playing games. The requirement will just be a reliable, low-latency 5G connection to an edge game server.
3. Telecom companies can partner game service provider so that they can include game bundles in the palette of data bundles. This will likely be an even bigger revenue stream than video streaming.
4. New game experiences will be enabled. Virtual Reality and Augmented Reality games require high bandwidth and low latency. 5G will enable such games to advance.

Some challenges will need addressing:

1. There will be a lot more games to choose from. Standing out will become even harder for game publishers.
2. Telcos may need to find new ways of bundling their services. Paying per unit of data per month, may become a bottleneck that stops users from gaming because they will use a lot of data
3. While it is expected that 22 percent of smartphones will be 5G-enabled by 2022, and only a fraction of these may be gamers, it is likely that game developers may still need to develop for the average user—who is either connected to a previous generation (3G, 4G) or uses a wired connection and a dedicated console. This may complicate the development process.