

Review On Cloud Gaming: Leveraging processing power of high-end processing machines on cloud and high-speed network for playing game

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Abstract

The cloud was basically designed to provide general-purpose computing using product hardware and its focus was on increasing resource combination as a means to lower cost. The rapid growth of the cloud computing, data collection and information sharing are led to a higher level and are replacing the traditional computation. As modern games normally require tremendous computing and rendering power at the game client, deploying games with such models can transfer the burden of hardware upgrades from players to game operators. One of the most vexing challenges might be latency that influences the quality of gamer's experience.

This paper proposes the use of cloud resources such as cloud computing and cloud storage as they provide high scalability as well as dynamic performance features which will enable the client to experience high quality gaming. The use of tcp protocol reduce the latency issues as well as it overcomes the challenges of security and Privacy.

Keywords: Cloud Computing, Latency, Data Collection, Scalability.

1. Introduction

Last few years' games has become highest grossing product in software industry and is consider as main benefiter. This lead in the manufacturing or creating more games which are better in every aspect than previously released games. There is increase population of players who play games on mobile devices

and pc which in return demands for more extravagant high graphic games. As development go on in gaming industry the games that are being developed are larger in size and graphics rendering audio rendering quality also increased. Due to this running such huge games become problematic using normal pcs and mobile. Realizing the clouds is infinitely processing source therefore it becomes main topics of research in gaming industry. Cloud gaming Presents a new way of delivering computer games to gamer where all the complex computations is done on cloud side not on the user's hardware instead it processes on the cloud. Mobile devices such as tablets and smartphones as well as low-end laptops and desktops have limited resources like limited computation power and are low battery-powered. Therefore, running high-end games which has high requirements on these resource-constrained gadgets may lead to lesser performance and high energy consumption. For example, the gaming frame rate may become too low which harm the smooth game play due to insufficient CPU power to execute software video decoders. This results in degraded gaming quality and may drive the gamer away which is not only a significant loss for game developer but also affects the game clients.

This paper proposes a system in which the cloud resources are used where the cloud is connected with the clients with tcp protocol. The client can access the game and play the game online without utilizing all its device resources as the resources that are required for playing game is provided by the cloud system. Here the client device only has to perform few task and the main complex tasks are done on the cloud. When gamers will play games using this system the resources consumed by devices is trivial amount, which prevents devices from quickly drain the battery and helps gamers to use their devices for other purposes. Hence, carefully calculating the performance and energy utilization of mobile clients is critical to the success of the new mobile cloud gaming ecosystem.

2. System Analysis

2.1 Existing System

Previously the computation was done on the same host of the game client. This was replaced by the another cloud system which has been represented in the figure above. The figure shows a heterogeneous infrastructure which is combination of cloud system as well as client hardware system. The cloud System contains the gaming platform that is present in the cloud as the gaming platform is the main system that performs all the computation required by the game. These computations are performed on the cloud. The work flow of the system is easy but it has a big disadvantage which is discussed below.

The command receiver module on client's device receives the clients command or action or keystrokes and then the command is send to the command interpreter module in the cloud gaming platform where the command is interpreted and send to the game logic module as shown in figure. The game logic module contains the main logic or working of games where the command is executed and the resultant background or scene is rendered here the video capture module captures or recorded the changes in scene background or state and then this video is send to the video encoder module where these video is encoded to send to the client device video decoder module.

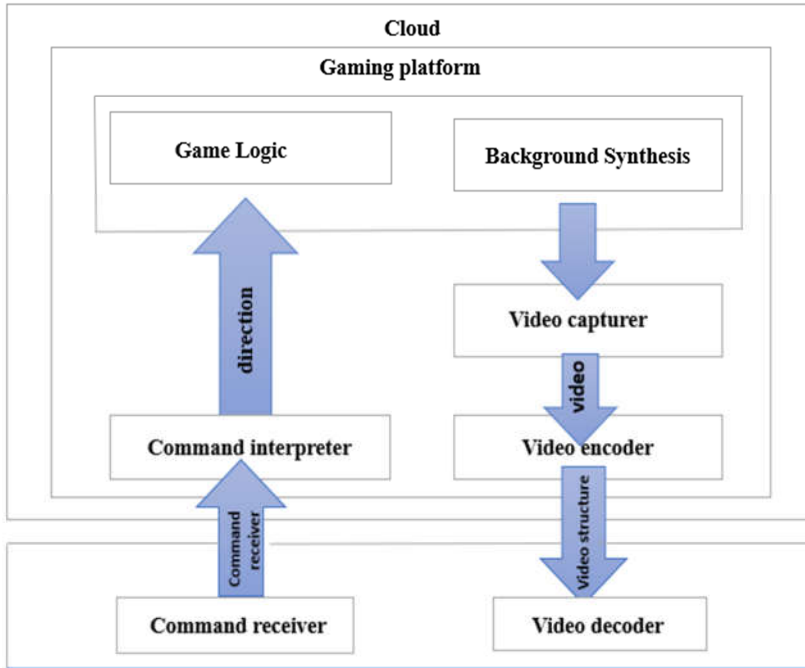


Figure 1. Existing System

Here the main issue is the latency problem is increased as to perform all the action from command interpretation to video decoding it takes quite a time which increases the latency. This system still needs a lot of clients resources to decode the video which is received from the gaming platform which creates overhead on client and slow down the performance of device.

2.2 Proposed System

In the proposed system it can be seen clearly there are number of verity of client’s device like laptop, desktop, mobile, tablet, etc. All these users are connected to the Game runner module which is present in the cloud system the client interacts with the game runner instance to play game. This game runner can play multiple instances of game, these are connected with the client’s device with a special protocol named as tcp protocol the main advantage of these protocol is that once the connection is established between the client and game runner the connection will be open till the close request is not send to the game runner.

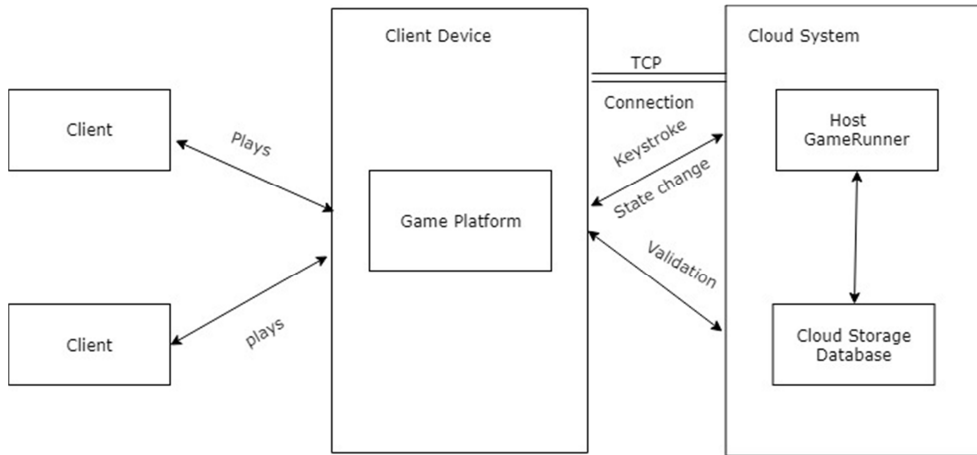


Figure 2. Internal System Architecture

3. Conclusion

Implementing this system can bridge the gap between the recommended System requirements like high processing power and Graphic Processor on client System by high-end games, hence reducing the overheads and latency issues from player’s machine by using the protocol such as tcp protocol and interacting with clients with keystrokes as well as state change. This system not only bridges the gap but also overcomes the challenges such as Security, Piracy, packet loss, latency which highly affects user experience.

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