ABSTRACT

The development of the game industry is increasingly advanced until the emergence of cloud gaming network technology. Cloud gaming allows low-spec clients to play high-spec games. An open-source cloud gaming platform is GamingAnywhere. In this study, we will implement a cloud gaming server using GamingAnywhere and combine it with a virtual machine. The virtual machines that will be used are VirtualBox and VMware.

This research is aimed at providing information about resource usage on servers and clients as well as Quality of Service (QoS) and Frames Per Second (FPS) from GamingAnywhere running on virtual machines. From the results of server measurements it only takes 12-21% CPU usage, 5-7% GPU usage, and 75-77% memory usage for VirtualBox and 17-26% CPU usage, 26-35% GPU usage, and 64-65% memory usage for VMware. From the FPS measurement results obtained on the client, it has an average of more than 59 fps for the three test games when GamingAnywhere is running on VirtualBox, VMware, and without using a virtual machine. From the measurement results, to get optimal QoS in accessing games with GamingAnywhere, a minimum bandwidth of 5 Mbps is needed and the distance between the client and the router is a maximum of 7 meters. If the bandwidth is less than 5 Mbps, the system experiences a delay of $\pm$ 0.003 seconds and the packet loss is more than 10%.

Keywords: Cloud Gaming, Virtual Machine, GamingAnywhere, Resource Usage, Quality of Service, Frame Per Second.