

ABSTRACT

The Learning Management System (LMS) is a learning management technology. In its development, it still utilizes hypervisor servers which require large resources. Because the virtual machines in the hypervisor run the guest operating system separately from the host, making the server heavier. Because it takes technology like docker to reduce the use of resources in building LMS. Docker reduces resource usage with container instances that don't require a guest operating system such as a hypervisor. So this study aims to analyze the application of Docker containers in cloud computing-based LMS. The tests were carried out using Amazon web service (AWS) as a cloud computing infrastructure using three servers that will handle 1000, 3000, and up to 10000 requests. The test uses the Apache Benchmark and Wireshark with analysis parameters in the form of throughput, packet loss, delay, jitter, and the output parameter is CPU Usage. The test results show that the throughput values obtained are 9,42 to 12,12 Mbps (a very good category according to THIPON standards) for all variations of requests. Furthermore, the delay value obtained is also in a very good category, from 0.7 ms to close to 1 ms. In comparison, the packet loss values obtained are within the range of 0.2% to 0.32% (good category). However, the jitter value obtained for testing 1000 requests is 1.6 ms (good category), so the LMS server is still optimal when serving those 1000 requests. The jitter value is still maintained for increased requests up to 10,000. The results of monitoring CPU usage show an increase in percentage as the number of requests increases, but the system can run optimally.

Keywords: *Amazon web service, Cloud computing, Docker container, Hypervisor, Learning management system (LMS).*