

ABSTRACT

The World Wide Web (WWW) has experienced phenomenal evolution since it was first developed. At first the web was developed to make it easier for scientists to exchange huge amounts of information. Gradually because the spark of collaboration among people the web system has evolved to suits the needs from users who are increasingly widespread and varied. As various services transition into digital services, the size of web applications continues to grow. This makes application development relatively slow and quite risky the more the application getting bigger because the application is in the form of a single package. To answer the various complexities in the current application development process, applications are broken down into various small components called microservices. Docker is a growing platform for developing microservice systems.

In this research, e-Commerce web service platform based on docker was implemented. To support e-Commerce web services, several integrated applications are needed, namely reaction commerce for front-end systems, mongoDB for backend systems, and RancherOS to develop and monitor the whole system. To review system performance, different tests were carried out using 1 container, 2 containers, and 3 containers to get an overview of system performance under different conditions. The measurement parameters reviewed are seen from the application QoS, namely throughput and response time, and server performance which is seen based on the performance of CPU utilization and memory utilization.

The test results obtained are in the form of varying response time performance based on different tests, but referring to the ITU-T G.1030 standard the system developed is able to meet the standard for a maximum capacity of 200 users using 3 containers with a response time value of 9.19 seconds, the value of throughput continues to grow along with the addition of the number of containers, CPU utilization performance with an average of 80%, and memory utilization performance with an average of 30%.

Keyword : Docker, Load Balancing, Container, Web Service