ABSTRACT

In this era of digitalization, more and more network operators have used cloud and cluster computing to implement a network operations center, which serves as a large-scale mobile or cable network monitoring center. Typically, cloud computing adopts container-based virtualization using Docker to pack containers with Kubernetes as a multihost Docker container orchestration.

This final project aims to discuss the performance comparison between the two solutions offered by Google, Inc. in using kubernetes namely: kubernetes by using VirtualBox and kubernetes installed directly on personal computer (from scratch). The parameters used are CPU Utilization, Memory, IOzone Read, IOzone Write, throughput, response time, request per second.

After analyzing and testing both solutions, kubernetes by using VirtualBox and kubernetes installed directly on personal computer (from scratch), it can be concluded from the test result that Kubernetes platform containing Nginx web server service can lead to performance degradation in terms of source management engine power and quality of web server services. In terms of resource management, Kubernetes (from scratch) is superior with a value of 70.53% while Kubernetes using VirtualBox has a value of 66.99%. In terms of quality of web server services, with all parameters both throughput and response time, Kubernetes more superior with a large value for each solution are 18.16 MB/s and 1.87 ms, but for the request per second parameters, it is superior to Kubernetes using VirtualBox with large value is 6561.37 req/s.

Keywords: *Cloud Computing, Cluster Computing, Kubernetes, Minikube, Container.*