

ABSTRACT

Load balancing is a method in cluster computing that can be used to increase the scalability and decrease the server workloads by distributing traffic load to several clusters of server in equals, in order that the traffic can run optimally, so that it doesn't cause the server becomes overload or down.

In its implementation, the container-based virtualization can be used to implement the load balancing by using HAProxy image as the load balancer. Container is the virtualization technology that allows the program run directly connects with linux kernel in host operating system. Different from Virtual Machine, container doesn't use hardware to virtualize. In some researches, it's believed that container is more lightweight than hypervisor, so that it allowed to process load balancing on the container in this final project.

This final project will implement load balancing system that are run on three containers, those are Docker, LXC, and LXD. This research is to know the performance from those three containers from web server services side and resource utilization when server are using load balancing and not (single server). From the research, we know that the performance of server using load balancing had better result than the single server. In this final project we also got that Docker showed better performance on throughput, response time, and request per second. While LXC showed better result on request loss and CPU utilization parameters. In terms of fairness, Round Robin algorithm is more fair than Least Connection with the fairness index is 1.

Keywords : *Load Balancing, Cluster Computing, Container, Docker, LXC, LXD*