

## ABSTRACT

*Currently, the site has become a business-oriented media and the preferred interface for system updates. The more that access through a web site, will lead to the workload of a service provider that is a web server becomes heavier and less than optimal. If the condition persists, it is likely there will be overloaded and the server will be down so that the request can no longer be served.*

*Server Clustering is one solution that can be implemented to resolve the problem, which is a technology that combines multiple servers working together as if a single system. There are several methods on the clustering system, the load balancing and failover. With load balancing, the system will be able to serve a large load access and minimize failures in the service request from the user, since load balancing works evenly distribute the traffic load to some other server that clustering. Failover serves to increase the high availability. If a system failure occurs on the main server, a backup server will directly replace the main server to continue to provide services.*

*In this final project has been implemented load balancing and failover on a virtual server cluster. From this research, it is known that the performance of the server by using load balancing is much better than single server, with the number of requests per second maximum in the amount of 2352.937 requests and throughput at 3.53 MB/s with the least connection scheduling HAProxy. The distribution of the load to three servers provide a decrease in the value of the CPU utilization of 21%. For availability server on failover scenario, obtained the value of downtime by an average of 1992.8 ms. In this research also note that load balancing by using HAProxy has better performance compared with Nginx.*

*Keyword: Cluster, Load Balancing, Failover, Virtual, Haproxy, Nginx*