ABSTRACT

Due to the rapid growth of information and communication technology, the need of real-time communication is also keep increasing. In the context of communication or information system, human as a client needs a high-availability server for service provider. The existence of server to serve clients for 24 hours is very crucial. In fact, there are plenty of constraint to keep that available. Hence, we need a solution to overcome the possibility of server failure, by both of inside or outside cause. Server cluster technique is the way out for that highly available server. Server cluster technique classifies several servers into one cluster, consists of primary and secondary servers and apply redundant system. These backup servers cover the server's failure in providing the service for clients.

This final project implements the server cluster technique on Elastix and Openfire as primary server. So when one of the servers within the cluster fails, another server will act as a backup to keep it highly available.

The result of downtime measurement is taking 0.692 second to move from alpha server to beta server, and taking 1.622 second to move from beta server to charlie server, and taking 1.701 second to move from alpha server to charlie server. This implementation is highly effective for decreasing the downtime (without server cluster it takes 2.4 minutes). Availability score is obtained based on the result of the calculation is 99.999%, have met "The Five-nines" recommendation. QoS score for *jitter* are standardized as "Good" (based on ITU-T Standard) and "Medium" for packet loss scores (based on Tiphon Standard). MOS measurement result for instant messaging service have met the "good" standard which is range in 4.1-4.9 (based on ITU-T P.800) and for voice and video calls have met the "good enough" standard which is range in 3.1-3.9 (based on ITU-T P.800). This overall system is considered good VoIP quality, so it is feasible to be implemented.

Keywords : *high availability , server cluster, primary server, backup server, failover.*