

## ABSTRACT

VoIP services (Voice Over IP) that can pass voice traffic, data, and video is growing in today's society. The need of realtime services which are based on IP is also demanding a good performance. One of the important role is a server that acts as a service provider. It is necessary in order to have a way so that the server can still serve clients despite server failure. Currently, an infrastructure is not yet fully migrated to use cloud computing. Dedicated servers still in use considering their performance is better than the cloud server. The role of backup server is required in the event of disruption and will replace the master server performance.

In this final project implemented redundant server on the VoIP services between dedicated server and cloud server. Where dedicated server will act as the master server and cloud server will act as a backup server that replace the current performance of a dedicated server when it experiences down. It is to achieve high availability condition and produces little downtime when the condition is planned or the condition is unplanned so that VoIP services will continue to be used by the client.

With the implemented system above, the results in terms of downtime handled by the backup server in cloud server is 0.8537 seconds/year for planned condition and is worth 1.1858 seconds/year for unplanned condition, this value is smaller than not using a backup server which has the downtime 172.6 minutes/year. For availability value owned by the result of the calculation is 99.9999% both for planned and unplanned condition that have met the recommendation of "The Six Nines". Throughput will determine the condition of server just before the failover is 10790.85367 Bps and after the failover is 10720.54967 Bps for planned condition and 10718.05172 Bps for unplanned condition which means it has not a significant change even though there has been a failover. Therefore, the implementation is feasible to implemented.

**Keyword** : Failover, Downtime, Master server dedicated, Backup server cloud, High availability, VoIP