

## **ABSTRACT**

Voice over Internet Protocol (VoIP) is a technology that enables voice communication over the Internet network. The advantages of VoIP is the reduction of telephone costs, the transmission process is done in the same network with the data, and have a wider range of applications. Development is supported by the increasing number of VoIP communication system that is passed in the Internet network. And to accommodate the increasing number of users who use the Internet network, migration from IPv4 to IPv6 is required.

In this Final Project VoIP system that can be transmitted in IPv6 networks will be designed. To access the system user will use a softphone called Linphone as calling device. The VoIP system is implemented in IPv6 networks to prepare for Internet network changes from IPv4 to IPv6. For additional feature, the system is equipped with billing system and Asterisk management that can be accessed through a Web page.

Parameters of Quality of Service (QoS) that are analyzed in this Final Project is throughput, delay, jitter, and packet loss. The results show the value of a constant throughput of 0.043 Mbps, a constant delay at 19.9 ms, jitter is constant at 19.7 to 19.8 ms, and packet loss 0%. Based on the QoS test results, the system has a good quality because the result meets the ITU-T standard.

**Key Words : VoIP, IPv6, billing**