

**PERFORMANCE OF VoIP OVER LEGACY ETHERNET
USING OPNET**

This thesis is presented in partial fulfillment for the award of the Bachelor of Electrical
Engineering (Hons.) (Communication)
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ACKNOWLEDGEMENTS



In the name of Allah S.W.T, the Beneficent, the Merciful. Foremost, all praise to Allah for the entire incredible gift endowed upon me and for giving the health and strength to keep up the study and enable me to prepare and complete this thesis.

Appreciation is expressed to those who have made contributions to this report and in ordered to accomplish my final year project.

Firstly, I want to thank to my beloved parents who have given me an endless support especially morally and encouragement to produce the best work. Their support and advices have boosted my spirit to do the best in my final project.

Specifically my thank goes to my supervisor, Associate Professor Ruhani Bt. Ab Rahman for her support, valuable comments, guidance, suggestions and opinions throughout this thesis. Without her cooperation, this project may not succeed.

To all my friends, together with whom I have shared my sorrow and cheer, for the all opinions, suggestions and constructive comments.

Last but not least, I want to express my greatest gratitude for those who have helped me in completing this project whether it is directly or indirectly. Thank you and may Allah bless and reward them for their generosity.

ABSTRACT

Voice over Internet Protocol (VoIP) is predicted to become the usable and widely use technology of packet switching in common communication network. The voice, data video integrated technology will be reduced communication system operational costs among users especially in big companies. VoIP is support by Quality of Services (QoS) to give more reliable service.

This paper studies VoIP performance over legacy Ethernet by comparison between hub and switch. The simulation model of VoIP LAN with hub and switch are developed to compare the performance for both networks. The simulation models derived based on the campus network located in a small area of not more than 100 meters, considering the maximum length of the 10BaseT LAN. These network models have been simulated using OPNET Modeler 8.1 Tools. The results for both network models are analyzed and compared. End-to-end delay, Ethernet delay and throughput produced are compared between switched Ethernet and a hub-based Ethernet.

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CHAPTER 1

PROJECT BACKGROUND

1.1 INTRODUCTION

Voice over Internet Protocol (VoIP) is an IP telephony term for a set of facilities used to manage the delivery of voice information over the internet. VoIP converts analog voice signals into digital data packets and supports real-time, two way transmission of conversations using Internet Protocol (IP) ^[1]. VoIP involves sending voice information in digital form in discrete packets rather than by using the traditional circuit-committed protocols of the Public Switched Telephone Network (PSTN). A major advantage of VoIP and internet telephony is that it avoids the tolls charged by the ordinary telephone service ^[2]. The main disadvantage of VoIP is a greater potential for dropped calls and generally lesser voice quality ^[1].

Legacy (10Mbps) Ethernet has some common architectural features. These legacies are referred to as shared Ethernet because they share a common collision domain. It becomes easier to violate maximum delay limits as the network grows and becomes more complex. The timing limits are based on parameters cable length and its propagation delay, delay of repeaters, delay of transceivers and delay within station ^[3].

1.2 OBJECTIVE OF PROJECT

- To explore the world of packet technology in Internet Protocol (IP) that being discussed in detail to transporting voice.
- To study the performance analysis of VoIP by comparing the performance using switch-LAN and hub-LAN.
- To understand the concept of voice transmission in packet switching network.
- To acquire knowledge about the performance analysis in VoIP LAN using OPNET.