UNIVERSITI TEKNOLOGI MARA

SKYPE MULTIMEDIA APPLICATION TRAFFIC ANALYSIS ON HOME UNIFI NETWORK

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ABSTRACT

This research presents an analysis on Skype application network traffic collected using Wireshark applications tool. Skype being considered for traffic analysis because it is one of the most online video media applications used in today's network communication. Before, people communicate through Skype using telephone line where it is very costly. In today's broadband network called Unifi giving better bandwidth for Skype users and cheaper. However, it is important to determine whether the bandwidth offered by the Unifi is fully utilized by the users as they consistently pay for it. The main objectives of this research are to analyse Skype traffic characteristics such as usage of bandwidth, round trip time (RTT), and packet loss, Skype protocol, and Skype traffic model. The method involved establishing both video and voice calls at different time using Skype of home Unifi where one of the users runs the Wireshark to capture the traffic. Data are collected in schedule and analysed using MATLAB software. Collected data are analysed on total of bandwidth usage and type of protocol used. Comparison is being made between different protocols used in time. Then, Skype traffic model is identified by fitted the raw data. Two-parameter Cumulative Distributions Functions (CDF) is generated. Maximum Likelihood Estimator (MLE) technique is used to get the best traffic model which presents the highest MLE value. Result presents that Skype is using UDP protocol more than TCP protocol and the bandwidth usage is underutilized where only 10% of bandwidth is used from the offered committed access rate paid on the access bandwidth line. This study is significant in developing a dynamic committed access rate algorithms line which would benefits the broadband network users.

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INTRODUCTION

1.1   RESEARCH BACKGROUND

Getting closer to 2017, the internet usage has become wider and increase rapidly day by day since it interconnects people all over the world. Many application has been brought to the user in order for them to stay connect with people around them. One of the famous application that being used is Skype. The users for Skype has reached 300 million in 2016.

The main reason for non-users Skype to start using Skype is the low cost services to mobiles and landlines and it is free between Skype users [1]. Since many party start using Skype, it is advantages to analyse the traffic in Skype in terms of throughput, bandwidth and packet loss. In order to figure out the solution of the main problem, it is important to determine what type of protocol being used by Skype, what is the bandwidth range, RTT and packet loss being produced by Skype traffic.

Home access to computers and the Internet has expanded dramatically over the last two decades, and the ways children, youth, and adults use these tools are in rapid flux, as new technologies are developed. For example, Internet-enabled devices now include not only computers, but televisions, electronic books, and other handheld devices such as music players and cell-phone.