UNIVERSITI TEKNOLOGI MARA

VIDEO STREAMING: A CASE STUDY ON 3G NETWORK ENVIRONMENT

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Abstract

The purpose of this paper is to discuss on the performance of video streaming over 3G network. It is often difficult to determine the reason for certain behavior of streaming just by viewing the streaming server logs file. In order to study the behaviors of video streaming over 3g network, measurements of packet delay, jitter and packet loss are captured from the RTP packet analysis and a study is conducted based on the captured data. Observations method also is used to monitor the QoS of the streamed movie clip in different test cases. This paper also includes the comparison of video streaming quality with relates to different mobile environments.

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Tables of Contents

Chapter 1

Introduction

1.0 History of 3G Wireless Network

3G is the third generation of wireless network technology that provides high speed bandwidth to handheld communication among mobile devices such as smart phone or smart PDA. 3G wireless networks can support data transfer rates from 128 kbps for fast moving devices, such as handsets in moving vehicles up to 384 kbps for slowly moving devices, such as a handset carried by a walking user. It can even reach the data transfer rate of 2.05 Mbps to stationary devices. With this kind of bandwidth rates, 3G networks will be able to offer a variety of services such as mobile telephony and video streaming.

1.1 Before 3G

The age of cellular phone started from 1980s and it was based on the idea of cells. It is called 1G. 1G is based on AMPS standard. It provides only voice channel, not data channel and solely work on analog signal. After that, comes 2G in the market that works on digital networks for spectral efficiency. 2G can reach a maximum data rate of 9.6 kbps to 14.4 kbps. 2G has several standards in use such as TDMA, GSM, CDMA and PDC. 2.5G comes afterwards with data rate of 64kbps to 144kbps and works on packet-based transmission. A new wireless standard EDGE, has been developed to increase the bandwidth of GPRS. EDGE triples the bandwidth capacity of GPRS to 384 kbps thus allowing GSM and TDMA operators to offer high-speed services. EDGE based networks fall in between 2.5G and 3G networks.

Currently, most of the third world country has established themselves successfully with the 2G or 2.5G network, and now they are moving towards the more advance