

ABSTRACT

Live streaming technology is almost same with conventional streaming. In real time application like this, the data is coming from a live source. In here, the process needed is minimum buffering, live encoding, and live muxing with a short delay.

Next problem appears in streaming application is limited bandwidth. IP network is used to transfer many data at the same time, and its bandwidth is also limited. Otherwise, video streaming application needs a large bandwidth to pass the data in a high bitrate. This process is almost same like a packet flood so the network will be full and the service applied on that network won't work properly and will add some problem like a packet loss and delay problem.

This research will try to solve problems above, in addition to stream a low bitrate video but with an acceptable visualization quality, multiclient, and how to handle the unpredictable network behaviour. The solution is applying a video streaming using H264 with IP multicasting and a small adaptive program. H264 codec is choosed because of its promises that could produce a high quality video in a low bitrate. Second choice is IP multicast to handle limited bandwidth problem, because multicast will only send a stream for multiclient. Adaptive straming will automaticly change video bitrate when bandwidth is dropped because of any activity inside.

The measurement result for 3 clients shows that average bandwidth is 558 kbps. This system saving bandwidth for about 60% compared with unicast system. In an adaptive multicast system, the bitrate will automatically resized depend on the bandwidth availability. This adaptive program also help to reduce packet loss because of dropped bandwidth, so this will also produce a better video quality. PSNR result for adaptive system is 31,42 dB, this is better than a non-adaptive methods that only have 19,59 dB. For subjective measurement, the MOS result is between 3 and 4 from 1-5 scaling. This prove that adaptive streaming method will help to produce a better video in client.