Comparison Of Streaming Performance Using HTML5 And Flash Player Version 23

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ABSTRACT

Sending information through streaming video is better than text or voice. One type of streaming multimedia is video on demand (vod) which is a multimedia service with streaming process. Streaming video on vod requires wide bandwidth for maximum transmitted data rates. Some say comparing html5 vs flash is like comparing apples and oranges. Html came up with their newest specification called html5 a few years ago. Html5 natively supports on demand and live video streaming sources. Adobe flash, on the other hand, has been the only way to let rich audio and video content run on the web for more than a decade. This research will compare between html5 and flash player. This research will simulating file package transfering scenario which is file size 144p, 240p, 360p, 480p, 720p. Simulation is using mikrotik as a bandwidth management on network. In this research, performance will compared to quality of service (qos) using wireshark. Simulation is done with 100 mb file packet delivery scenario. Results of research will get the performance value of streaming video using html5 and flash player. Analysis includes time span, troughtput, delay, using wireshark. The comparison will be obtained differences in vod performance between html5 and flash player.

Keywords: Video on Demand, HTML5, Flash Player.

1. Introduction

Streaming VOD (Video on demand) is a technology for playing video or audio files. VOD can be used directly or with pre-recorder of a web server machine. This is a method for displaying streaming video. Video streaming is also a process of data transmission, similar to radio and television technology. With VOD, one can easily stream content by viewing the downloaded video. At the same time, users can choose to wait until the video has finished downloading. (Oka Robiono, 2012).

HTML5 is a development of previous HTML ever. HTML5 is already supported on streaming video to date HTML5 development is still limited to 3 formats namely mp4, ogg, webm. While the Flash player is a third device to display streaming video. Flash Player is freely available as a Plugin for the latest version of the web browser.

Quality of Service (QoS) is defined as a measure of how well a network is and an attempt to define the characteristics and properties of a service on an IP-based network, IP QoS refers to the performance of IP packets passing through one or more networks. QoS is designed to help end users become more productive by ensuring that end users get reliable performance from network-based applications. QoS refers to the ability of the network to provide better service on certain network traffic through different technologies.

QoS technology is a technology that allows network administrators to handle the effects of conjuncture on packet flow traffic from various services. QoS handling is done by utilizing network resources optimally, compared with increasing the physical capacity of the network. QoS aims to provide different quality services for diverse needs of services within the IP network, for example to provide custom bandwidth, reduce packet losses, offer time delays and variations of time delays in the transmission process. QoS offers the ability to define the service attributes provided both qualitatively and quantitatively.
According to Szigeti and Hattingh (2004)

QoS is defined as a measure of system service availability and transmission quality. The availability of services is an essential element of QoS. The transmission quality of a network is determined by thoughput, packet loss, delay and jitter.

Based on some of the above definitions, it can be concluded QoS (Quality of Service) is the ability of a network to provide good service by providing bandwidth, overcoming jitter and delay. The purpose of QoS is to meet different service needs, which use the same infrastructure. (Telecomunication and Internet Protocol Hormonization Over Network - TIPHON).

This research is obtaining to analyze the performance of streaming video from HTML5 and Flash player. Testing is done with several times of trial by using several files that have different sizes. Parameters measured in this test are transfer time, throughput and delay.

2. Research Method.

The first step is to collect the required data. The next step is problem analysis. this step explains the issues contained in the video stream. In the design section, describes the preparation of the devices used ranging from the design of web-based streaming HTML5 and Flash Player. Next is the implementation and testing. In this step describes the scenarios performed in the trial process. In the analysis section describes the results of the test scenarios that have been implemented.

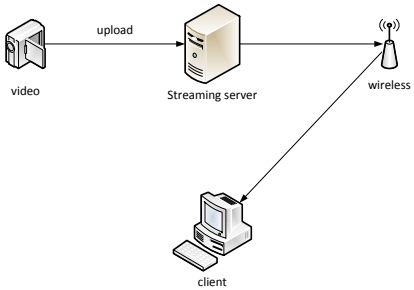

Figure 1. Topology of video streaming.

Figure 1 is the design of streaming video process that will run inside the network. Videos already in the codec are uploaded into the media server which will be received by the client through the internet network in order to access the streaming video. Research planning is divided into 3 main stages, namely topology planning, configuration stage, and analysis phase.

Network topology planning based on litrature study is the initial step. This network topology is the location of server and client that will be used as implementation in testing. At this stage the researcher will create topology between server and client so that it is connected well. For implementation topology on streaming video using 1 server and 1 client connected with virtual box.

The configuration stage uses the simpleserver tools used for web sharing on ip networks. IP is what will be accessed through the client.

The analysis is based on the simulation of both types of streaming. Then do the analysis after the package is declared complete. After streaming the video, the transnfer time parameter will be obtained and calculated as required.

Throughput is the actual data rate per unit time. Throughput can be called a bandwidth in the actual conditions. Bandwidth is fixed while the throughput is dynamic depending on the current trafc.

Delay or packet time in system is the time since the packet arrives into the system until the packet is finished transmitted. One type of delay is the transmission delay, which is the time it takes for a sender to send a packet. Delay can be affected by congestion, physical media, distance or long processing time.

3. Discussion.

Transfer Time is the total time required to deliver a packet packet from server to client declared in second sutuan. Method of taking parameters done as follows:

1. Client calls the streaming data from which server through Virtual mikrotik.
2. Perform network analysis using Wireshark tools.
3. Calculate the parameter value that has been presented by Wireshark application.

Table 1. Comparison of Transfer Time

File Size	HTML5	Flash Player	Average
	Value		
144p	17.549	18.187	00.638
240p	25.911	27.554	01.643
360p	48.309	49.969	01.660
480p	83.396	84.027	00.631
720p	160.157	161.992	01.835

Table 1 presents that data taken as transfer time value. The data is taken from the time span that has automatically been displayed by wireshark. From data testing that has been done as much as 5 times on each file obtained the average data in table 1.

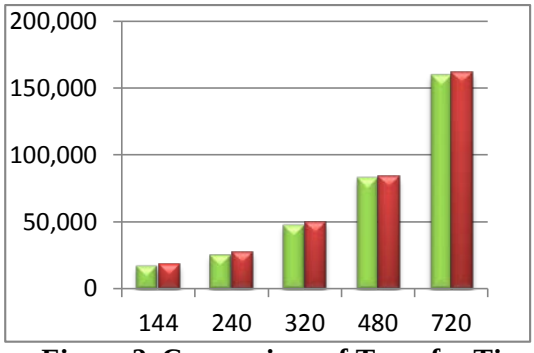

Figure 2. Comparison of Transfer Time Charts

From the results of the average comparison can be seen that troughput owned by HTML5 larger than Flash Player. Then it can be concluded that the best mechanism for the side of the throughput value is HTML5. Due to the greater throughput owned by a process, the faster data will also be accepted.

Table 2. Comparison of Troughput Value

File Size	HTML5	Flash Player	Average
144p	4.992	4.973	0.019
240p	5.065	4.983	0.082
360p	5.065	5.038	0.027
480p	5.188	5.078	0.110
720p	5.271	5.235	0.036

The data is taken from the test data that has been done 5 times on each file and obtained the average value throughput as in Figure 3.

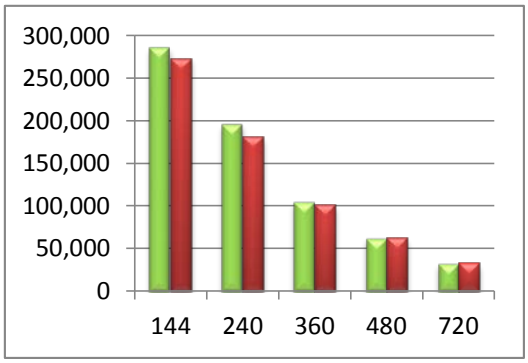

Figure 2. Comparison of Troughput Charts

Delay is a time delay of a package caused by transimisi process from one point to another. To do the calculation of delay parameter value done comparing the value of transfere time with the number of bytes of data packets.

Table 3. Comparison of Delay Value

File Size	HTML5	Flash Player	Average
144p	0,000199	0,000208	0,000009
240p	0,000191	0,000202	0,000011
360p	0,000197	0,000204	0,000007
480p	0,000192	0,000196	0,000004
720p	0,000187	0,000192	0,000005

The comparison of the average table and graph can be seen that the delay is owned by HTLM5 is smaller than the Flash Player. Then it can be concluded that the best mechanism for the delay parameter aspect is HTML5. Due to the smaller delay that is owned by a transition process, the faster the streaming video.

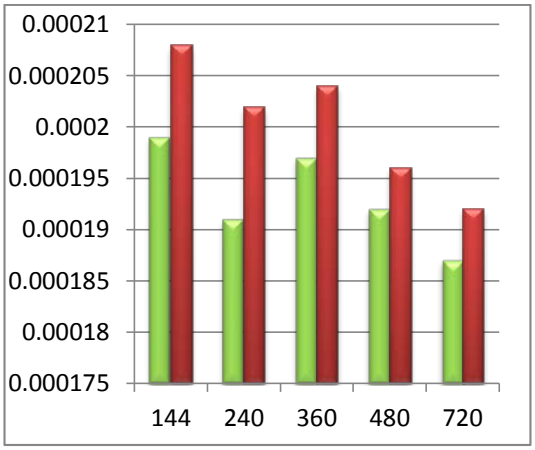

Figure 3. Comparison of Delay Time Charts

4. Conclusion.

From the description above, obtained a conclusion about this research.Based on the transferr time, througput, and delay parameters in video streaming experiments, HTML5 is have good quality than Flash Player.

In testing streaming video transfer time for HTML5 on 144p video quality has an average of 17.549s smaller compared to Flash Player which is 18.187s. While the parameters of througput on video quality 144p HTML5 has an average of 285,282 and while for Flash Player has an average of 273,517. The delay parameter on video quality 144p for HTML5 has an average of 0.000199 and for Flash Player has an average of 0.000208.

As a suggestion for further research in analyzing the performance of streaming can add to the variations that have not been applied in this study. Further video streaming can be done by combining VPNs in real-time. Analysis using other methods such as Broadcast or Multicast. The analysis can be expanded more broadly by multiplying undesired QOS parameters.

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