ANALYSIS OF MEDIA STREAMING ON DIFFERENT PLATFORMS OVER INTRANET

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BORANG PENGESAHAN STATUS TESIS*

ANALYSIS OF MEDIA STREAMING ON DIFFERENT PLATFORMS
JUDUL :   OVER INTRANET

SESI PENGAJIAN : 2013 / 2014

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ANALYSIS OF MEDIA STREAMING ON DIFFERENT PLATFORMS OVER
INTRANET

FITRATUL NOVIDA BINTI DASRIZAL

This report is submitted in partial fulfillment of the requirements for the
Bachelor of Computer Science (Networking)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2013

DECLARATION

I hereby declare that this project report entitled

ANALYSIS OF MEDIA STREAMING ON DIFFERENT PLATFORMS OVER INTRANET

is written by me and is my own effort and that no part has been plagiarized

without citations.

STUDENT   : _____   Date: 3-JAN-2014

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SUPERVISOR   : _____   Date: 3-JAN-2014

     (SUHAIMI BIN BASRAH)

DEDICATION

"Great Work Make Successes"

To my lovely mother Novia Binti Bermawi,

Supportive father Dasrizal Bin Syamsu,

and my family members.

Love you.

ACKNOWLEDGEMENTS

Fortunately, I want to thanks to Allah S.W.T for giving me the opportunity to deliver and finish my final project in good health and condition.

Next, I express my gratitude and thanks to my supervisor, Mr. Suhaimi Bin Basrah for giving advice, opinions and suggestions along the implementation of the project. Every advice and words encourage me to complete and deliver the project successfully.

Thanks to my course mates and lectures for their some ideas and helping during the project implementation. There is a lot memory, helping on each other, share the information bring the success of the project and I gain a lot of experience and knowledge.

My heartfelt gratitude to my family that always support and encourage me. Without them I will not gain the confident to complete the project and finish my study. You are always in my mind.

ABSTRACT

This report discuss about analyzing the performance of media server on different platforms of Windows Server 2008 and Ubuntu Desktop 12.10. The performance is analyzed based on the characteristics provided by the quality of service (QoS). The parameters for the performance include delay, round trip time, bandwidth utilization, throughput and packet loss. This performance covers the user datagram protocol (UDP) as the transport protocol for media streaming. The project used VideoLAN Player as the media server, while Wireshark and MyConnectionPC as monitoring tools to monitor these parameters. The report provides installation of the media server and steps on streaming the media data from both media server to the clients. The monitoring tool in the client's laptop will monitors and captures the data of delay, round trip time, bandwidth utilization, throughput and packet loss. These data will be gathered and documented in table formed before summarized through several graphs. The final stage is to make an evaluation which is the project will come out the better performance platform to provide media streaming to the client.

ABSTRAK

Laporan ini membincangkan tentang menganalisis prestasi pelayan media pada platfom yang berbeza iaitu *Windows Server 2008* dan *Ubuntu Desktop 12.10*. Prestasi kedua-dua platfom ini dianalisis berdasarkan ciri-ciri yang disediakan oleh kualiti perkhidmatan (QoS). Ciri-ciri tersebut termasuk *delay, round trip time, bandwidth, throughput* dan *packet loss*. Prestasi ini meliputi *user datagram protocol* (UDP) sebagai *transport protocol* untuk *media streaming*. Projek ini menggunakan VideoLAN *Player* sebagai pelayan media, manakala *Wireshark* dan *MyConnectionPC* sebagai alat pemantauan untuk memantau parameter ini. Selain itu, laporan menyediakan langkah-langkah untuk memasang (*install)* pelayan media dan menghantar data daripada kedua-dua platform ke pelanggan Pemantau yang berada dalam laptop pelanggan akan memantau *delay, round trip time, bandwidth utilization, throughput* dan *packet loss*. Semua data ini akan dikumpulkan dalam bentuk jadual sebelum diringkaskan melalui rajah graf. Peringkat akhir adalah membuat penilaian dimana projek akan mengenal pasti platfom mana yang menberikan prestasi yang lebih baik untuk menyediakan pelayan media kepada pelanggan.

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LIST OF ABBREVIATIONS

TV	-	Television
LAN	-	Local Area Network
WAN	-	Wide Area Network
DNS	-	Domain Name Server
DHCP	-	Domain Host Configuration Protocol
PSTN	-	Public Switch Telephone Network
QoS	-	Quality of Services
PRTG	-	Paessler Router Traffic Grapher
SNMP v1	-	Simple Network Management Protocol version 1
SNMP v2	-	Simple Network Management Protocol version 2
FTMK	-	Fakulti Teknologi Maklumat dan Komunikasi
UDP	-	User Datagram Protocol
TCP	-	Transmission Control Protocol
RTSP	-	Real-Time Streaming Protocol
WLAN	-	Wireless Local Area Network
WMA	-	Windows Media Audio
WMV	-	Windows Media Video
MPEG	-	Moving Picture Experts Group
RTP	-	Real-Time TransportProtocol
RTCP	-	Real-Time Transport Control Protocol
VoIP	-	Voice over Internet Protocol
CBWFQ	-	Class-Based Weighted Fair Queuing
PMIPv6	-	Proxy Mobile IPv6

QoE	-	Quality of Experienced
AP	-	Access Point
MOS	-	Mean Opinion Score
CPU	-	Central Prcocessing Unint
GNU	-	General Public License
VLS	-	VideoLAN Server
VLC	-	VideoLAN Client
DVD	-	Digital Video Disk
IDT	-	Inter Departure Time
PS	-	Packet Size
D-ITG	-	Distributed Internet Traffic Generator
RTT	-	Round Trip Time
MYPC	-	MyConeection Personal Computer
VLAN	-	Virtual Local Area Network
IPv4	-	Internet Protocol Version 4
IPv6	-	Internet Protocol Version 6
OSI	-	Open System interconnection
NIC	-	Network Interface Card
UTP	-	Unshielded Twisted Pair
Mbps	-	Megabits per second
ms	-	Mili seconds

CHAPTER I

INTRODUCTION

1.1 Project Background

Multimedia networking has the ability to educate and connect people around the world through internet especially demanding of media streaming. The terms of media obtained from medium meaning carrier or mode. Television (TV), radio, telephone, and internet are the example of mediums to broadcast the media around the world either local area network (LAN) or wide area network (WAN). Server is a software program that serves the user by providing more than one services that running on the same computer in same network or different computers on different networks. The services include Domain Name Server (DNS), Domain Host Configuration Protocol (DHCP) and Media Server. According to Mahabbur [1], within Public Switched Telephone Network (PSTN), the media server receives and transmits media data and full motion of video to the user through network.

The combination and interaction of information content with multiple forms of media data give the definition of Multimedia. Media data include text, image, audio, video and animation. To negotiate and allow successful dissemination of multimedia data from one to another, there are two major components need to be concern [2]. One of the major component is data compression which is the source encoding of multimedia data sources. The data sources include image, audio, and video. The other major component of multimedia networking is quality of service (QoS) issues which include delay, bandwidth utilization, throughput and packet loss.

Performance of media server can be done by monitoring the transmission of data on network devices through interface availability of delay, bandwidth utilization, throughput, packet loss, and available performance characteristics that have been characterise in quality of service (QoS). There are many monitoring tools would be used to monitor these performance characteristics. Some of monitoring tools are SNMP v1 and SNMP v2, Wireshark, MyConnectionPC and PRTG Network Monitor.

This project has been presented in network architecture with different platforms of Window Server 2008 and Ubuntu Desktop 12.10 over intranet. One media server, VideoLAN Player will be installed on both platforms. There are several clients access and stream the audio and video from media server of both platforms. One of monitoring tool will monitor the transmission of media elements to see the performance of data, how the throughput and data rate transmission during streaming. The monitoring tool will be installed in client's computer.

Lastly, the objectives of this project are to design network architecture using the provided devices, to install the network architecture, services, and media server, to monitor the transmission of media data by user through streaming and analyze the packet travelling from media servers. After getting the analyze data during testing day, the datas have been tabulated and some evaluation, assumption and consclusion

will be consume and written on this report. There will be comparison of data performances when client streams media elements through different platforms of media server, Window Server 2008 and Ubuntu Desktop 12.10. The comparison datas include the performance of delay, bandwidth utilization, throughput and packet loss.

1.2   Research Problem

Nowadays, multimedia networking is usually used by all users to listening music, watching a movie, download and upload media data. In order to develop multimedia networking, network and media server are needed include two different platforms to see how the performance of media data transmission. Media server is a software that allows clients to access the media data of audio and video.

Table 1.1 Summary of Research Problem

No	Research Problem
RP1	Media Streaming is one of services provided by the internet and has higher requirement from the user. Due to this, do all the operating system has good performance as the media server, between the platform of Windows and Ubuntu which one could present the better performance of Quality in Services (QoS) in media server over Intranet.

1.3   Research Questions

There are several research questions that will be used to guide the implementation of the project. The research questions are:

Table 1.2: Summary of Research Questions

RP	RQ	Research Questions
RP1	RQ1	How to implement a network architecture of media server with different platforrms over intranet?
RP2	RQ2	What can be used or technique to see the performance of media data transmission?
RP2	RQ3	Which one platform that provide a better performance of Quality of Services (QoS)?

1.4   Research Objectives

There are several objectives that will be gain from the project. The objectives include:

Table 1.3: Summary of Research Objectives

RP	RQ	RO	Research Objective
RP1	RQ1	RO1	To design a network architecture using the needed devices and software and install the service and media server.
RP2	RQ2	RO2	To monitor the performance of packet travelling from media server of different platform to the users.
RP2	RQ3	RO3	To make an evaluation which platform would provide the better performance during transmission of media data.