

COMPARISON ON TRAFFIC PATTERN IN PEER TO PEER NETWORK

HAZWANI BINTI BADRI

UNIVERSITY TECHNICAL MALAYSIA MELAKA

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HAZWANI BINTI BADRI

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Saya HAZWANI BINTI BADRI


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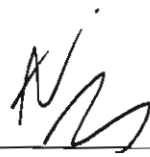
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BATU 8, JALAN SG PUSU

SELANGOR

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(TANDATANGAN PENYELIA)

EN. ERMAN BIN HAMID

Nama Penyelia

Tarikh : 6 JULAI 2011

CATATAN: * Tesis dimaksudkan sebagai Laporan Akhir Projek Sarjan Muda (PSM)

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STUDENT :  DATE: 4/7/2011
(HAZWANI BINTI BADRI)

SUPERVISOR :  DATE: 6 JULY 2011
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DEDICATION

To my beloved family..

friend..

and readers...

ACKNOWLEDGEMENTS

I would like to thanks En. Erman bin Hamid for giving assistant to complete this project successfully.

To my family members for understanding my work. My parents, who have been giving me support and motivation through my project. My siblings, who always taking care of me.

To my friend, that always be my mirror. It already 5 years since our first met. After this we could not promise when we will meet again. Let makes this Final Year Project as something that we could remember in the future.

Until then, spread the love together.

ABSTRACT

The project that I have chosen to evaluate is called comparison on traffic pattern in peer to peer network. This project includes analyzing data, transferring files and monitoring the network traffic. Basically, this project is about analyzing the network traffic that happens in P2P applications. The analyzing process covers four different types of P2P application. Each P2P applications produced their own traffic pattern that are differ from one another. The P2P applications that i have analyzed are BitTorrent, uTorrent, Shareaza and Vuze. These four applications have been analyzed in a few context of packet such as capacity of the files as well as the protocols that being used. Analysis that has been done is executed using Wireshark. This software allows me to execute all my activities and analysis. That activity has been done with the help of that software. This software has generated a graph for every situation that makes the analysis a lot more easily accordingly.

ABSTRAK

Projek yang saya pilih untuk diperhalusi diberi tajuk *comparison on traffic pattern in peer to peer network*. Pelaksanaan dalam projek tersebut termasuklah menganalisa data, memindah fail, dan memantau keadaan rangkaian. Secara amnya, projek ini melibatkan penilaian dan analisa terhadap rangkaian trafik yang berlaku dalam aplikasi antara *peer*. Proses analisa dalam projek ini meliputi lima jenis aplikasi P2P yang berbeza. Setiap satu aplikasi P2P akan menghasilkan pola trafik yang tersendiri yang berbeza antara satu aplikasi berbanding aplikasi yang lain. Aplikasi P2P yang saya pilih untuk tujuan projek ini adalah BitTorrent, uTorrent, Shareaza dan Vuze. Keempat-empat aplikasi ini telah di analisa dalam beberapa konteks paket seperti kapasiti fail serta protokol yang digunakan oleh setiap satu aplikasi P2P tersebut. Analisa yang dijalankan menggunakan perisian Wireshark. Perisian tersebut membolehkan aktiviti-aktiviti menganalisa data dapat dijalankan dengan lebih lancar dan sempurna. Melalui perisian ini juga, gambarah graf dapat diaplikasikan dan proses analisa menjadi lebih mudah dan tersusun.

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LIST OF ABBREVIATIONS

P2P	Peer to Peer
IRC	Internet Relay Chat
TCP	Transmission Control Protocol
NAT	Network Address Translation
IP	Internet Protocol
DHT	Distribute Hash-Table
FTP	File Transfer Protocol
i.e.	Example
HD	High Definition
PC	Personel Computer
TV	Television
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure
G2	Gnutella2
PSM	Projek Sarjana Muda
UDP	Unit Datagram Protocol

LIST OF ATTACHMENT

ATTACHMENT	TITLE
1	Journal
2	PSM Log Book
3	Gantt Chart

CHAPTER I

INTRODUCTION

1.1 Project Background

Each peer to peer (P2P) application produced their own traffic pattern that are differ from one another. The objective of the project is to analyze the data, transferring files and monitoring the network traffic. Analyzing the traffic that happens in P2P applications.

In this project, we discussed the technology in implementing P2P information file sharing system, analyzed data, transferring files and monitoring network traffic for some applications of P2P file sharing system. For this study, we will look at each P2P application program characteristic which include host and topology distribution, protocol that involve, traffic pattern and user interface environment.

1.2 Problem statement(s)

Client server is a traditional method to make a communication. By only using switch, each nodes can connect to each other. In P2P application, internet will be consume like it should be. Although P2P is still developing, it is not a new technology. There are many P2P program yet still people don't usually use it.

People still don't know how P2P is working. There are so many P2P programs to be choose. You can get it by free or need to pay for it. But still it give the same thing (software, audio, movie) in other way. To develop the usage of this program, researcher decided to make a research based on P2P application software. Determine the best P2P program so, user could acknowledge about it and developer could use the best P2P program to develop better P2P program application.

1.3 Objective

- i. Comparison for P2P application program that are already release in the market.
 - P2P applications is growing dramatically, particularly for sharing large video or audio files and software. The growth and the bandwidth intensive nature of such applications suggests that P2P traffic can have significant impact on the underlying network.

- ii. Analyze how P2P packet works.
 - It was a freeware that usually used by internet user to upload, search or download. By using packet analyzer or sniffer that intercept and log traffic passing over a digital network. At the end of project, researcher could identify which P2P application was the best in term of some criteria that highlighted.

1.4 Scope

The scope that involves in this project is:

- i. P2P version
 - By this time, June 2011, researcher use the latest version of P2P application program.
- ii. Networking area
 - Incoming and outgoing packet were being captured on internet area. Meaning that, the packet were thru intermediate device such as router.
- iii. User involvement
 - User that involve in this project are user of P2P client, also known as peer/seeder. Researcher will download the data file from nearer seeder that detect by tracker.
- iv. Time
 - This project is taken from January 2011 until June 2011. At this period of time, all activity are being done for this project.

1.5 Project significance

The project significance would be the outcome or output that has been analyzed by me after the completion of the project. The results not only show the fastest P2P application, but also helps user to choose the best P2P for them to download files. The completion of this project will also help other researches out there to compare the behavior of P2P in broader scope.

1.6 Expected output

After the completion, researcher have expected to produce the packet traffic of each and every application that researcher have chosen. After the packet traffic has been produced, researcher get to see the traffic pattern and generalized at the end of the process.

1.7 Conclusion

This project analyzed the requirements of P2P shared information system, and then discussed the technology for implementation of P2P information sharing system, finally analyzed some applications of P2P information sharing system. P2P computer can react to the requirements of other computers, the scope and the pattern of requests and reactions is varied according to the specific application program.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

P2P systems are becoming increasingly popular as they enable users to exchange the digital information by participating in complex networks. P2P systems have become a popular medium through which to share huge amounts of data. The P2P applications that researcher have decided to study and describe its behavior are based on four different network or protocol. The application involves are uTorrent, Shareaza, Vuze and BitTorrent.

Researcher am required to review some journals as well as literatures to make me understand more on what researcher should do during the PSM duration. For This project, researcher have reviews more than ten journals in order to make me understand more the how the packet traffic moves. Since P2P are quite popular and has been used

widely nowadays, the journals and literatures of this topic can easily be found in the Internet.

However, in P2P is not only about the packet traffic, but it also about the performance. It has been divided into categories which makes our findings a little difficult because the topics are somehow irrelevant.

In order to get the correct findings and journals, one will have to know the keywords of their findings. The related journals will then be the best reference for those who wish to get the different point of view or to get the idea on this project.

2.2 Literature Review

Literature review is important to the one who wants to develop a system, make a research or even the one who analyze network performance. The more the one reviews the literature, the more knowledge they will gain.

2.2.1 Domain

P2P traffic pattern is in ICT in Advanced Manufacturing Technology domain. The title itself, P2P does relate to distributed computing. P2P is a new application based on the internet. It is a kind of software technology whose core technology or service including P2P management, communication, safety and object registration, discovery and access. P2P provide the hardware logic and P2P addressing and the handshaking technology in the bottom communication protocol. So, as to set up static connection, the involved technologies are IP address resolution, NAT routing and firewall.

2.2.2 Keyword

- i. P2P
 - An abbreviation of Peer to Peer. P2P is computing or networking is a distributed application architecture that partitions tasks or work load between peers. Peers are equally privileged, equipotent participants in the application. They are said to form a P2P network of nodes
- ii. Network analysis
 - Analysis of general networks
- iii. Differentiate network traffic
 - Data in a network. In computer networks, the data is encapsulated in packets. In this project, researcher will measure the network traffic. Network traffic measurement is the process of measuring the amount and type of traffic on a particular network.

iv. P2P network community

- Indicate the use of networking technologies by, and for, a local community.

v. File sharing

- Distributing or providing access to digitally stored information, such as computer programs, multi-media (audio or video), documents, or electronic books. It may be implemented through a variety of ways. Storage, transmission, and distribution models are common methods of file sharing incorporate manual sharing using removable media, centralized computer file server installations on computer networks, World Wide Web-based hyperlinked documents, and the use of distributed P2P networking.

2.2.3 Previous Research

In order compare some different Peer to Peer application program, we will discussed about some protocol used by P2P application program. In P2P, they will be categorize into some main subject, but in researcher will discuss about three of them; “Fasttrack, directConnect and Bittorent (Subhabrata Sen, 2004).”

FastTrack use some techniques to encrypt messages. It is one of the most used protocol for file-sharing. FastTrack has a capability to download different parts of the same file from some different peers. In downloading phase, we can stop or pause and resume it later. The basic structure is, there are supernode. Other than being ordinary peer, supernode is a backbone of the network. All other peers is just share their files. Supernode required to have good performance in bandwidth availability and