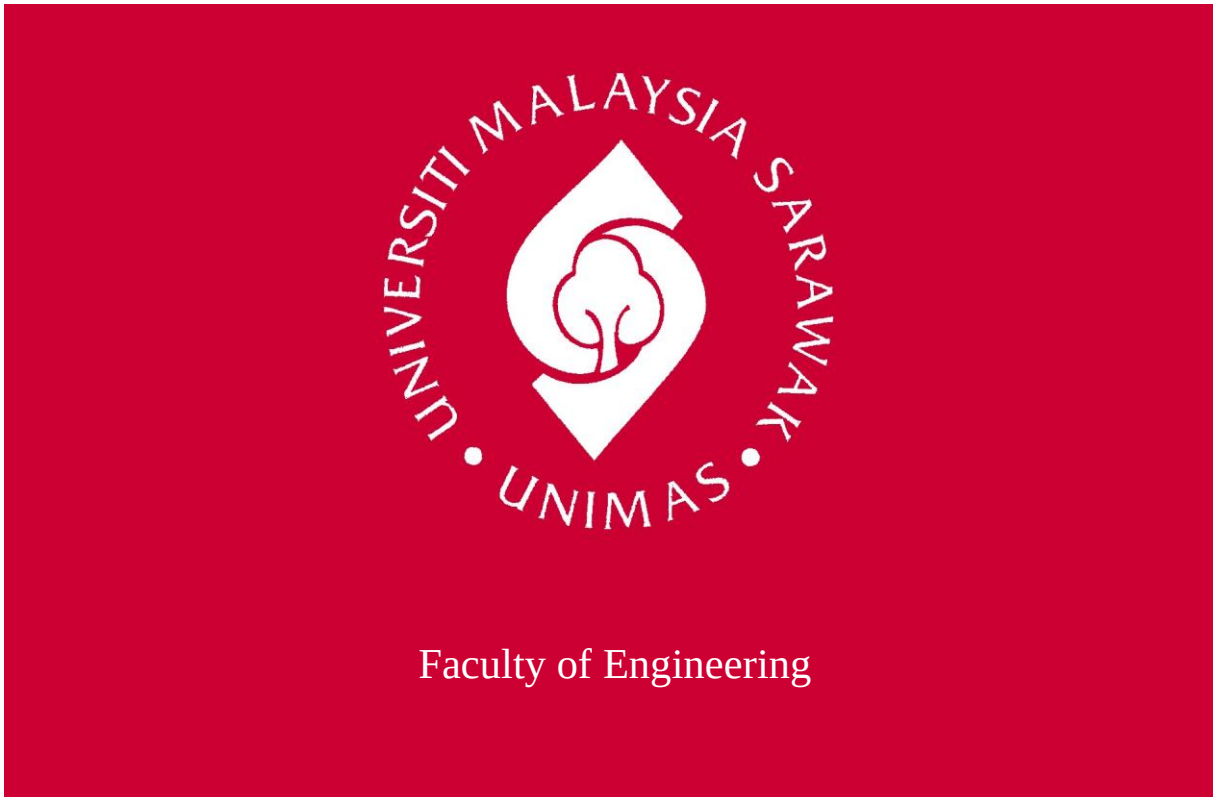


# MINI SERVICE PROVIDER

**Terence Jerome Daim**

**Bachelor of Engineering with Honours**
**(Electronics & Telecommunication Engineering)**
**2006**

# UNIVERSITI MALAYSIA SARAWAK

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# MINI SERVICE PROVIDER

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This project is submitted impartial fulfillment of
The requirements for the degree of Bachelor of Engineering with Honors
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2006

For my beloved family & friends

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# ABSTRAK

Pembekal perkhidmatan mini adalah satu system yang mampu memanafaatkan segolongan pengguna yang berhasrat untuk mencari cara penyelesaian mudah dalam perkongsian maklumat dan perkhidmatan. Dengan wujudnya rangkaian teknologi dan perisian maklumat, maka objektif projek ini adalah untuk merealisasikan system pembekal perkhidmatan mini melalui perancangan yang terperinci.

# ABSTRACT

Mini Service Provider is a system that will benefit a group of users with the intention to seek an easy method to share resources and services. With the advent of available networking and software development technologies, it is thus the main aim of this project to make this system a reality through proper planning and execution.

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# CHAPTER 1

# INTRODUCTION

This chapter gives an introduction on the project which is the Mini Service Provider. The purpose, objectives of this project and also thesis organization will also be discuss in this chapter

## 1.1 Mini Service Provider (MSP) system: An introduction

The purpose of the MSP system is to enable a group of computers to be easily configured as a system where one of the computers can act as a dedicated server and provide resources and services to other computers. One of the advantages of this system is cost effective. For example resource like disk space can be shared among all computers.

## 1.2 Project overview

Referring to **Figure 1.1**, the MSP system concept is depicted. A group of users can access the MSP server via any network such as Ethernet or phone lines

networks. Once connected, users can then request for services such as email, File Transfer Protocol (**FTP**), files and folders storage and as well instant messenger

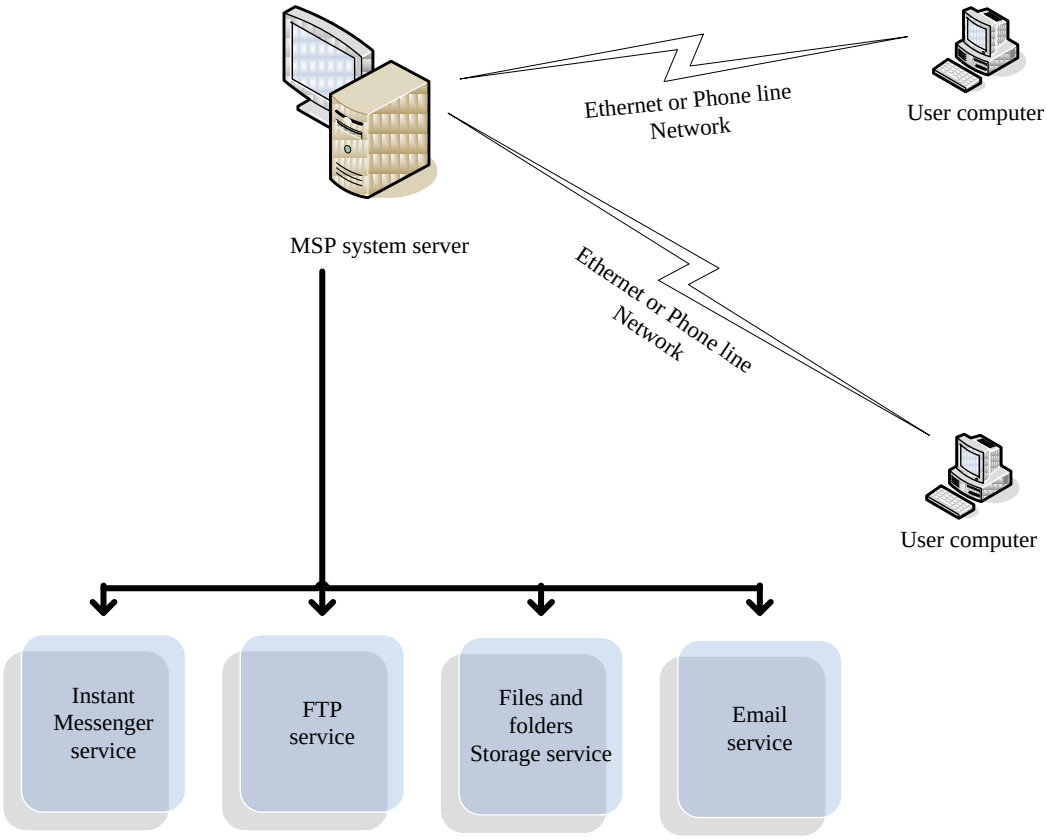


**Figure 1.1: MSP system concept**

## 1.3 Objectives

The basic objective of this project is to develop the MSP system which will involve several stages ranging from planning till achieving the end product. It is also intend that the system will achieve a level of reliability, efficiency, usefulness and satisfaction. Other than that is to try to overcome the limitations of the system as much as possible.

Throughout this project, it is also aim that deeper knowledge on network technology is gained, particularly in the process of designing and developing a network system. Other objective of this project is to get experience on network programming using Visual Basic and also learn windows socket programming.

## 1.4 Organization of Thesis

In the early stage, an introduction of this project is briefly described in Chapter 1. Project overview and objectives are also being highlighted here. Apart from that, chapter-by-chapter outline of this project is also included.

The next stage - Chapter 2 is detail discussion and research on this project which includes network technologies and review on the development software that will be used in this project.

Chapter 3 will illustrate this project methodology which includes the MSP system specifications and development process.

Chapter 4 describes the methods of test conducted and the analyzed results on the MSP system.

The last chapter which is Chapter 5 will be the conclusion and recommendation for future upgrade and expansion based on the results and analysis made. Other than that, problems encountered during carrying this project will also be included in this chapter.

# CHAPTER 2

# LITERATURE REVIEW

The purpose of this chapter is to discuses the involvement of some of the main technologies that are vital in the process of developing the MSP system. These technologies include networking protocols, devices and network tools. The development process also will see the involvement of software development tools and database technology.

## 2.1 Communication

Basically there are four relationships that can be categorized in the MSP system namely **Server & Client, Server & Administrator, Administrator & Client and Client & Client**

In order for these relationships to established, some sorts of communication method has to be determined and developed. These include communication protocols and connection technologies which will be describe later in this chapter.

### 2.1.1 Communication protocol

A communication protocol is a set of rules and regulations by which computers networked together can communicate [1]. Just as people require the use of a commonly understood language to communicate, so do computers. If people are talking to each other in a room, chances are very high that they are speaking in a common language.

Computer networks mimic the communications methods used by human beings. This situation is not exactly a coincidence because computer networks are designed by human beings. A very common and popular language used in computer networks is the TCP/IP protocol. This protocol which is very important in developing the MSP system will be describe later in this chapter [1].

### 2.1.2 Transmission Control Protocol/Internet Protocol Suite (TCP/IP)

TCP and IP were developed by a Department of Defense (DOD) research project to connect a number different networks designed by different vendors into a network of networks (the "Internet"). It was initially successful because it delivered a few basic services that everyone needs (file transfer, electronic mail, remote logon) across a very large number of client and server systems. Several computers in a small department can use TCP/IP (along with other protocols) on a single LAN. The IP component provides routing from the department to the enterprise network, then to regional networks, and finally to the global Internet. On the battlefield a communications network will sustain damage, so the DOD designed TCP/IP to be robust and automatically recover from any node or phone

line failure. This design allows the construction of very large networks with less central management. However, because of the automatic recovery, network problems can go undiagnosed and uncorrected for long periods of time.

As with all other communications protocol, TCP/IP is composed of layers:

- **IP** - is responsible for moving packet of data from node to node. IP forwards each packet based on a four byte destination address (the IP number). The Internet authorities assign ranges of numbers to different organizations. The organizations assign groups of their numbers to departments. IP operates on gateway machines that move data from department to organization to region and then around the world.
- **TCP** - is responsible for verifying the correct delivery of data from client to server. Data can be lost in the intermediate network. TCP adds support to detect errors or lost data and to trigger retransmission until the data is correctly and completely received.
- **Sockets** - is a name given to the package of subroutines that provide access to TCP/IP on most systems [2]

### 2.1.3 IP Address

An IP address is an address for a station or other device on the Internet. This type of address consists of 4 bytes, which are represented as decimal values separated by periods, as in 123.45.67.89. In order to ensure uniqueness, IP addresses are assigned in part by the Internet Assigned Numbers Authority (IANA) [3].

### 2.1.4 Ports

While An IP address identifies a machine or other device on the Internet. An IP port identifies an application running on an Internet host machine. Unlike serial communications, where there are only four ports, there is no functional limit to the number of IP ports. This is because a port is just a number [4].

This information is contained within either the transmission control protocol (TCP) or user datagram protocol (UDP) header that immediately follows the IP header. **Table 2.1** lists common protocols and their associated port numbers [5].

| Port | Protocol |
|---|---|
| **20** | File Transfer Protocol (FTP) (data) |
| **21** | File Transfer Protocol (FTP) (control) |
| **25** | Simple Mail Transfer Protocol (email, outgoing) |
| **53** | DNS (domain names) |
| **80** | HTTP (web) |
| **110** | Post Office Protocol 3 (email, incoming) |

**Table 2.1: Common protocols and their associated port numbers**