CHAPTER 1

INTRODUCTION

1.1 Background

Nowadays, Information & Communication Technology (ICT) has influenced many aspects in our life. It has changed the way we think, changed how business process is conducted, changed the way we work and even sometimes changed our lifestyle. One significant driver of ICT is computer system. In this information era, it is hardly to find a business that doesn't involve or use any computer system in doing the activities. Business in every sector has used computer system for doing their daily activities. Moreover, the decrease in computer system cost, the increasing computing power and the booming of Internet; all of these reasons have led us into the dramatic increase of computer system usage.

One important trend in computer system utilization is networking. Organizations such as large enterprises, public sector institutions, education institutions, and government institutions have a large number of computer users. These users are usually distributed; means that they are located separately in many places.

To improve the performance of the business itself, this distributed users need to be interconnected in order to have good communication among them. Communication between these users allows them to exchange information, coordinate among

themselves to perform a specific task, share heavy tasks that is too hard to be done all alone and at many times also share same computer resources. In the end, this communication is needed for better productivity.

As time goes by, issues on storing and receiving digital information come to the surface. Due to the increasing power of the computer system and the booming of Internet, the number of digital information has grown enormously. Digital information has grown in exponential rate. If ten years ago, 6 gigabyte of hard disk drive is already sufficient for a PC to perform its daily operation; now even 120 gigabyte of hard disk drive is just average. If ten years ago, size of a single file is in *kilobyte* term; now many files already sized in *megabyte*. Therefore, nowadays there is more digital information to be handled than before.

Add it with computer system trend in networking, users with a huge bunch of data will communicate each other. In their activities, they will exchange data and even sometimes retrieving the same data. Some challenges will occur, for example: how to share and use huge-sized data among distributed users, data availability, network performance and many more. Especially for large organization, these can be a serious issue since they manage some *terabyte* of data which is used by hundreds of even thousands of computer users.

An excellent data management solution is needed here to answer those challenges. One of the available approaches is Storage Area Network.

1.2 Scope

This thesis report is a research:

- About Storage Area Network concept and how it tries to answer the problem in data management.
- About Storage Area Network design.
- About needs and considerations in implementing Storage Area Network architecture.

This thesis report is not:

- Discussing Storage Area Network from the software or application perspective.
- Discussing on security issue in Storage Area Network.
- Deep discussion on Fibre Channel technology.

This thesis report also tries to be objective as possible and not supporting or acting as promotion of a certain vendor.

1.3 Proposed Approach

After discussing the theoretical foundation, the approaches used to discuss the topic are:

1) Information gathering

   Information gathering will use the method of collecting information from many resources; conduct a small survey and learning case study from the real world experiences. The information gained will be used to make the analysis.

2) System design

Based on the information gained, design of Storage Area Network architecture will be made.

3) Calculate

Calculate all the cost needed to establish this Storage Area Network architecture.

1.4 Aims and Benefits

The author has a great hope that by understanding this thesis report; people can get more clear understanding on Storage Area Network and how it can answer the challenge in storage solution.

1.5 Structures

This thesis report is divided into 7 chapters. Each chapter will also be divided into several sub-chapters. Each chapter has different topic for its own purpose. The brief information about this thesis report:

- *Chapter 1 : Introduction*

The first chapter is an introduction on the whole content of the thesis report. It gives the general background behind the topic. This chapter also discusses the scope of the thesis report, the approach used, aims and benefits and the structures of the thesis report.

- *Chapter 2 : Theoretical Foundation*

The second chapter covers all the theoretical foundation that is used to support the thesis report, i.e. all the computing and networking device with their technology, storing technology, Fibre Channel and Storage Area Network itself.

- *Chapter 3 : Problem Analysis*

The third chapter identifies the problems on storage system. It starts with describing the background of the problem, identifying the current challenges, information gathering and ends up with making the analysis on the problem.

- *Chapter 4 : System Design*

The fourth chapter starts with the available storage solution and how to choose the appropriate storage solution. It later describes what storage networking is, how Storage Area Network works and finally the design itself.

- *Chapter 5 : Result*

The fifth chapter shows the pricing of the solution with the comparison to other storage solution. Here will also show the result of implementing Storage Area Network, taken from case study.

Chapter 6 : Discussion

The sixth chapter will make the analysis of the results of implementing Storage Area Network. In the end, it will provide some common Frequently Asked Questions on Storage Area Network.

- *Chapter 7 : Conclusion*

The seventh chapter summarizes all important information and in the end makes a final general conclusion of this thesis report.