CHAPTER I
INTRODUCTION

I.1 Background

Nowadays, the competition of telecommunication in Indonesia has entered the era of convergence, in which telecommunication operators compete in providing network infrastructure by providing the best quality of service to the community. The more operators increase in using their network resources, the more efficient the operators can also offer their services to consumers (better quality with lower prices). To meet such market demands, operators or service providers must align their business with new technologies including by using appropriate and modern technologies including upgrading their network infrastructure to modern technology. One of the major platforms currently used in any modern telecommunications is Multiprotocol Label Switching technology.

Multiprotocol Label Switching (MPLS) is a method of forwarding data (packets forwarded over the network) using information on labels attached to IP packets. MPLS technology combines layer-2 switching technology with layer-3 routing technology. The MPLS labels embedded in Internet Protocol (IP) packets allow routers to drive traffic by label and not destination IP addresses. (Ghein, 2006).

Technology of MPLS has evolved and already has several types, including MPLS-IP technology that has been implemented in PT. XYZ (XYZ) right now. In MPLS-IP technology, the first path is the main pass through traffic and the second path is the failover path is in idle condition. The traffic movement will occur if the main path is disconnected and directly switch to the backup path.

XYZ still has some short comes, traffic on the main path is the congestion route due to the increasing number of subscribers. With the MPLS-TE technology the company can improve performance existing by maximizing the main path with TE technology, the tunnels direct the traffic from congested path to under-utilized path available to alleviate traffic congestion density on the main path.

In designing the infrastructure, this research uses Network Development Life Cycle (NDLC) method. This NDLC method has several stages starting from Analysis, Design, Simulation Prototyping, Implementation, Monitoring, and Management

(E. Goldman, 2004). In this study, the NDLC method used only to the stage of Simulation Prototyping.

Under these conditions. This research resulted in the design of MPLS technology the right proposal for XYZ from technological aspect which indirectly will have an impact on performance as well as increasing operator's competitiveness. Recommendations for technology selection are based on analysis, design and prototyping simulations using the NDLC method using EVE-NG simulator.

I.2 Formulation of Problem

Based on the background of the problem, obtained the formulation of the problem, such as the following:

1. How the existing network runs on XYZ?

2. How to improve performance efficiently with MPLS-TE technology in XYZ network?

I.3 Purposes of Research

The purpose of this research are as follows:

1. Condition of existing network in PT. XYZ.
2. Design of MPLS-TE technology in PT. XYZ by using NDLC method.

I.4 Limitation of Problem

Limitations of the study are as follows:

1. The NDLC method used in this work is only for simulation purposes.
2. Research will be emphasized and limited to MPLS-IP network migration project to MPLS-TE for PT.XYZ.
3. The proposed network simulated with EVE-NG simulator.

I.5 Benefit of Research

Benefits derived from this research are as follows:
1. Obtain network design from MPLS-TE network technology at PT.XYZ.

2. Increase network utilization and performance for PT. XYZ or other similar operators

I.6 Systematics of Writing

This research will be described with systematics of writing as follows:

CHAPTER I   INTRODUCTION

This chapter contains backgrounds, problem formulation, research objectives, research boundaries, research benefits and systematics of writing.

CHAPTER II   LITERATURE STUDY

This chapter contains the literature relevant to the problems encountered, previous studies that have relevance to the current research, and describes the NDLC method used.

CHAPTER III   RESEARCH METHODOLOGY

This chapter contains the literature relevant to the problems encountered, previous studies that have relevance to the current research, and describes the NDLC method used.

CHAPTER IV   ANALYSIS OF THE CURRENT CONDITION

This chapter describes the current state of network infrastructure in PT. XYZ Company that includes agency profiles, current network topologies, and network devices currently in use.

CHAPTER V   DESIGN OF THE PROPOSED NETWORK

This chapter contains an explanation of the proposed network design that includes the proposed network topology, the proposed network topology test, the proposed network topology test results, and the proposed network device.

CHAPTER IV   CONCLUSIONS AND SUGGESTIONS

This chapter contains conclusions that can be drawn from the design results undertaken during the research and advice for the company in the future.