CHAPTER I INTRODUCTION

I.1 Background

Telkom University is a private university located in West Java, Indonesia. It has a few institutions combined under the auspices of the Telkom Education Foundation. There are seven faculties at Telkom University, namely the School of System and Industrial Engineering, Faculty of Electrical Engineering, Faculty of Informatics, Faculty of Economics and Business, Faculty of Communication and Business, Faculty of Creative Industries, and Faculty of Applied Science.

Telkom University also had its new 20-floor learning building named Telkom University Landmark Tower (TULT). Telkom University Landmark Tower is the tallest learning building currently in Bandung. Telkom University Landmark Tower carries the concept of smart building and go green. This building has 288 rooms that will be used for learning activities, academic activities facility, laboratory, research, and many more. Every floor in this building is already connected to the internet because this infrastructure is essential nowadays to help support the mobility and productivity of the lecturer and students.

There are some infrastructure problems in the Telkom University Landmark Tower, which still lacks manpower to help troubleshoot the network when an interference happens. The second problem is that the Telkom University Landmark Tower has a closed concept building. It makes the network stuck in every room, which will be an issue for the network stability. The last problem is the lack of information transparency when handling a network problem. That network infrastructure currently does not have a comprehensive application to monitor the network troubleshooting.

The method that will be used in this research is the Network Development Life Cycle (NDLC) method. Network Development Life Cycle is a method used in developing or designing network infrastructure that allows monitoring to determine network statistics and performance. (James, 2004)

Quality of service is essential to help end users (clients) be more productive by ensuring that users get reliable performance from network-based applications.

Quality of service refers to the ability of a network to provide better services for specific network traffic through different technologies.

After identifying the problems, it can be concluded that the main problem currently being faced is that the devices and network topology design used at the Telkom University Landmark Tower did not support the "high availability" network connection. The troubleshooting handling was also hard to track, making the information not transparent for the other authorized personnel. To help solve the problems, the author will help suggest a Computer Network Design with a better Quality of Service performance for easy maintenance and monitoring at Telkom University Landmark Tower.

I.2 Problem Statement

The implementation of the research can be done well if the problem statement is clear to make the research more focused. The problem statement can be used as a benchmark so that the resulting solutions are not much different later. Based on the background, the problem statement that will be the foundation of this research are:

a. What results from identifying and analyzing the network design condition at Telkom University Landmark Tower?
b. How could the best network design at Telkom University Landmark Tower building be made to make it even more stable and has high performing Quality of Service?

I.3 Research Objectives

Research objectives are primary activities to be achieved in research. The research objective is used to obtain a formulation of the results of research through the process of searching, finding, developing, and testing knowledge. Research can be good if it meets specific, limited, and measurable elements. It can be checked by showing the results of the research. The research objectives of this research are:

a. Identify the problems from the current Telkom University Landmark Tower network design.

b. Improve the availability and Quality of Service performance such as packet loss, delay, and throughput on wireless and cable networks on the 4th, 8th, 9th, and 18th floors of Telkom University Landmark Tower.

I.4 Research Scopes

The primary activities to be accomplished in research are defined as research scopes. The research scopes formulate research results by searching, discovering, developing, and testing knowledge. A research can be good if it meets specific, limited, and measurable criteria. It can be verified by displaying the research's findings. To make the scope of this research clear, the author made some limitations to this research which are:

1. This research will only identify and analyze the network design at Telkom University Landmark Tower building and will not do any configuration at any network device.
2. This research will help analyze the wireless and cable network Quality of Service performance at Telkom University Landmark Tower to help and make it easier for the stakeholders to monitor and troubleshoot the network design according to the current building situation using the Network Development Life Cycle method, which is analysis, design, and simulation prototyping stage.

I.5 Research Benefits

The benefits of research are the impact on achieving goals. The use of research serves two purposes: theoretically developing author’s knowledge and helping to overcome, solve, and prevent problems in the object under research. The usefulness of the research findings is linked to the recommendations made following the conclusion. The expected benefits of this research are as follows:

1. For Telkom University, this research is expected to be a reference for research that relates to network conditions at Telkom University Landmark Tower Building using the Network Development Life Cycle method.

2. For other researchers in the information systems field, the author expects this research to help explain the most appropriate infrastructure to improve computer network infrastructure.

I.6 Report Systematic

This final project is arranged in a systematic form consisting of a front and inner cover. This section includes the title of the final project, the identity of the author who created it, and the department, faculty, and university where the author is pursuing his studies. The validation sheet contains the title of the final project and the identity of the author who made it and has been approved by the first and second supervisors. Foreword, this section contains gratitude to Allah SWT and thanks to all parties who have helped implement the final project. The table of contents contains the chapters and subchapters in the final project and their page numbers. List of figures/tables/terms, this section contains a list of figures/tables/terms in the final project, along with the page numbers. This final project proposal is described based on the writing systematic as follows:

CHAPTER I INTRODUCTION

This chapter contains a description of the research background, problem statement, research objectives, research scopes, research benefits, and report systematics.

CHAPTER II LITERATURE REVIEW

This chapter contains literature relevant to the problems taken and discussed the results of previous studies related to ongoing research.

CHAPTER III METHODS

This chapter discusses conceptual and systematic writing models to support the research process based on the selected object.

CHAPTER IV CURRENT NETWORK CONDITION ANALYSIS

This chapter contains information about the current state of the network configuration at the Telkom University Landmark Tower building.

CHAPTER V ANALYSIS AND DESIGN OF PROPOSED NETWORK

This chapter contains the analysis that has been carried out and the result of the analysis based on the problems contained in the Telkom University Landmark Tower building.

CHAPTER VI CONCLUSIONS AND SUGGESTIONS

This chapter contains conclusions from solving problems that have been carried out as well as suggestions for research that has been carried out.