

ABSTRACT

A computer network is cannot be separated from the configuration and design of topology, especially if the computer has a very large number of networks it needs a network design that is interconnected and integrated. Reliable communication is supported by a data security system and how the use of cables that support it to help the data until it is received properly. Wireless network connectivity in a room is very much influenced by interference. The ease of maintenance factor is also important in deciding how this network cabling system will be implemented, but it will contradict the aesthetics in its application. Telkom University Technology and Information Center is the unit responsible for the stable use of the system both infrastructure and other services available in the Telkom University education area.

Analysis and optimization of the proposed cabling system using the Network Development Life Cycle (NDLC) method with the Analysis, Design, and Simulation stages. The proposed design uses the Cisco Three-Layered Hierarchical Model which consists of the core layer, distribution layer, and access layer. The quality of data services can be measured by Quality of Service (QoS) which considers several parameters such as delay, throughput, and packet loss. The use of standardization in cabling systems such as ANSI / EIA / TIA-568 can also support to get a comparison both in terms of cost, maintenance, and to facilitate adaptation if the network wants to be further developed (expandable). The results of testing using QoS on the three buildings that are on the School Industrial Engineering (SIE) Building area of Telkom University, obtained results with a very good category for leisure time, namely, for time delay, throughput, and packet loss Building Graha Wiyata Cacuk Sudarjanto-B 0, 01299096 sec, 600 Kb/sec, and 0.61%, then for the Karang Building on the first, second and second floors, the results obtained are 0.006684141 sec, 0.023787 sec, and 0.0131 sec; 1245 Kb/sec, 297 Kb/sec, and 563 Kb/sec; 0.492%, 0.902%, and 0.0131%. Whereas for busy times it cannot yet be done due to the regulatory conditions applied by the university. It also produced an optimization analysis of the cabling system that can support faster and more effective data transmission than predetermined factors, namely cost and maintenance factors.

By analyzing and optimizing this network cabling system it can improve the scalability of internet usage services in all parts of the Industrial Engineering Faculty Building, which will work better and cover all areas. The final results of this thesis can be used as suggestions or recommendations that can be used when implementing a standardized network cabling system and can be seen comparing the effectiveness of the network cabling system that was previously used and the network cabling system that this thesis recommends.

Keywords: analysis, quality of service, optimization, network cabling, School of Industrial and Engineering