ABSTRACT

PT. XYZ is a company that thrives in providing ICT (Information Communication Technology) services in Indonesia. PT. XYZ has built and developed around 20.000 network connectivity all across Indonesia. Recently, PT. XYZ has been implementing the Multiprotocol Label Switching (MPLS) technology to build a Virtual Private Network (VPN). But, the said MPLS infrastructure is interconnected to only a single main path. When the single main path is down, there will be no other paths that serves as an alternative path. The devices connected to the main path could lose its network connectivity when the said path is down. Based on that condition, a new network design that has alternative paths as a redundancy path is needed in addition to the existing network design. The new design will implement the redundancy links feature to the MPLS technology so the traffic could automatically switch path to the backup path if the connection to the main path is severed. The development of this design will use the Network Development Life Cycle (NDLC) method. The development will undergo three main steps of six steps in the NDLC. The steps are as follow: the analysis step, the design step, and the simulation prototyping step. The result of this research is a blueprint and analysis of network design. The blueprint of MPLS network design that has implemented redundancy. Analysis of the proposed network design result as follow, throughput shows range between 182.39 and 182.52 kBps, delay of the network ranges from 7.3 to 7.4 ms, packet loss decreased from 77.92% to only 1.09% in the proposed network design.

Keywords: Network, NDLC, VPN, MPLS, Redundancy.