

ABSTRACT

Lembaga Ilmu Pengetahuan Indonesia (LIPI) Kebun Raya Cibodas is the one of LIPI to conduct, stocktaking, exploration, collection, planting and maintenance of vegetation mountains. LIPI Cibodas Botanical have activities using cable transmission medium (wired) on the LAN. On this conditions, network infrastructure LIPI Kebun Raya Cibodas has some problem to data communication that can not run optimally to support the employes activities and if the connection failure occurred from Central LIPI, Telkom provider has not been back up automatically and must be set first.

Designing the wired networks proposed using Network Development Life Cycle (NDLC) and GNS3 simulator as a virtual simulation to reduce the risk on the wired network proposed implemmentation process. Beside using the NDLC method on this research apply Three-Layered Cisco Hierarchical Model to simplify the infrastructure development and is divided into three layers are core, distribution, access layer. LIPI Kebun Raya Cibodas has two different internet connections are LIPI center and Telkom, to set up the connectivity using technology Host Standby Router Protocol on the router. This research is also implementing VLAN technology aimed at cost reduction, higher performance, and security.

The test is performed by the measurements and analysis QoS with parameters are throughput, delay, and packet loss in the wired network design proposed. This test using VLC application and wireshark as media in testing which later on the server side stream video and client streaming video will also stream by accessing the streaming server ip and wireshark read to get the QoS parameters which will be made analysis later.

Keywords: Network Technology, Wired Networking, Cisco Three-Layer Hierarchial Model, Host Standby Router Protocol, VLAN, QoS.