

## ***ABSTRACT***

*Information technology has become a matter that should be owned by the company. By applying IT in the enterprise, the information system will work optimally so the performance of the company will increase. Pusat Dokumentasi dan Informasi Ilmiah-Lembaga Ilmu Pengetahuan Indonesia (PDII-LIPI) Jakarta is part of Lembaga Ilmu Pengetahuan Indonesia (LIPI) is engaged in the documentation of scientific information and provide services journals and scientific information. PDII-LIPI using wired transmission medium LAN network to carry it's functions.*

*The design of the proposed network is designed based on the concept of the Cisco Three-Layer Hierarchial Model which divides the functions of each network device according to the device layer is located. By applying this concept, can reduce the cost and usage of network devices in an enterprise. PDII-LIPI has two internet connections from two different providers. Using Hot Standby Router Protocol to configured both routers. HSRP is working to ensure that the connection is still up if one of the connections have a problem or down. HSRP works by making one router in active and the other router in standby. Therefore, when a connection from the router that is always active down, the other router will change it's status to active and serves as the primary router.*

*Testing the proposed network is done by measuring the QoS parameter. The measured parameters are throughput, delay, and packet loss. Testing carried out by streaming a video from the server and the client will do the streaming. The QoS parameters will be read by wireshark that will be made an analysis.*

*Keywords— [wired transmission medium, cisco three-layer hierarchial model, Hot Standby Router Protocol, QoS]*