

## ABSTRACT

Growth of the need for communication technology of telecommunications users is growing very rapidly. It required the existence of an adequate network. One network that plays a role is the backbone SDH network Alcatel Northern Route Netre Arnet Jabar Bandung 1. Where there are still PDH network. Capacity factor, efficiency, availability and reliability is a factor underlying the need for network optimization process in the West Java Regional Network Area Network Bandung 1. In this final step taken is to define the scope of the network. Then do the reconfiguration PDH to SDH network by taking into account the needs of the canal for the future. Then created a new form of topology. Results topology is tested where the parameters are retrieved is the network topology, technical specifications, link budget, the bit error rate (BER) and the sensitivity of the device.

Development of SDH (Synchronous Digital Hierarchy) transport system, SDH devices implemented with the implementation of the Alcatel 1650 SM. Consists of 7 nodes namely Bandung, Jalancagak, Subang, Tasikmalaya, Garut, Cicadas, Cijaura and Dayeuh Kolot using G.655 optical fiber transmission media operating at 1550nm wavelength. This network has a capacity of 1 x STM-4 with a ring topology, ring networks was chosen because it has a good reliability to overcome the disorder compared with other configurations.

From the analysis results of the new link configuration obtained total rise time <rise time so that the network system is said to be qualified and with sufficient system margin that is equal to 6625 dB s / d 22 dB. By lowering the power link budget formula is obtained for a distance of 72.47 KM must use repeaters, to that obtained repeater at node Kadipaten, Cikijing, Cibatu and Cicalengka. Then based on measurements obtained with a BER meter this link between the nodes it is connected with the BER is below tolerance.

*Keywords : Plesiochronous Digital Hierarchy (PDH), Synchronounous Digital Hierarchy (SDH), Rise Time Budget, Power Link Budget*