

## ABSTRACT

One cause of internet connection penetration inequality in Indonesia is limited existing telecommunications infrastructure, so we need a media that can be used as a solution. One solution is Broadband Powerline (BPL), BPL allows data and information transmitted over existing power lines until rural area. Where One application of BPL is that it can be used for the solution of lack education, especially in areas that do not have the telecommunications infrastructure, but already has the power grid.

The final task is made to analyze the performance of BPL networks when used for Video Conference (Vicon) and Video on Demand (VoD) as an alternative solution to education. Homeplug AV is a continuation of the Homeplug 1.0 which allows the use of Video Audio service. Case studies conducted at the BPL network of PLN P3B residential Gandul Cinere.

The analysis showed, the addition of background traffic on the video conference service affects the amount of delay, jitter, packet loss, and throughput. Delay of video in the traffic load of 4Mbps is 271.9857 ms and 10Mbps Delay of voice in the traffic load of 10 Mbps is 444.4769 ms (beyond the standard of the ITU-T and Cisco). Jitter of voice is outside the cisco standard when it began to be burdened 2Mbps and no one is in the bad category according to ETSI / THIPON standard. Jitter of video is beyond cisco standard when it began to be burdened 1 Mbps, and according to the ETSI / THIPON standard when it began to be burdened 4Mbps. Voice packet loss when starting burdened 1Mbps is 40.29% and video packet loss is outside the standard when it began to be burdened 1 Mbps which is 46.88%. Throughput decreases with the addition of loading is given. Functional voice Throughput when starting burdened 1 Mbps from 10.10.2.27 to 10.10.2.30 (41, 6 kbps) and video when starting burdened 1Mbps from 10.10.2.27 to 10.10.2.30 (53,286 Kbps) is outside the standard. Voice Standard is 8kbps and video 64kbps. The addition of background traffic on VoD influences the throughput and buffer time. VoD throughput fall below the standard when it began to be burdened 3 Mbps. The bigger the traffic load, the more decrease throughput and increase the buffer time. Based on the MOS, Vicon has a good quality up to 5Mbps traffic loaded and VoD has good quality up to 3Mbps traffic loaded.

Key words: BPL, Video on Demand, Video Conference, QoS, e-learning.