ABSTRACT

Currently, Indonesia is faced with problems where data traffic including OTT dominates the telecommunications services lead to interconnection revenue declining. In the other hand, the cost of network maintenance tend to increase, creating what so called "scissor effect". The emergence of IP technology may provide benefit to the operators in handling the scissor effect and improving the level of customers loyalty. However, the current interconnection regulations in Indonesia are still using TDM. Therefore, a recommendation on standardization of IP encoding and interconnection model is required.

In this research, technical aspect analysis of IP interconnect model is analyzed using comparison model, that is Peering and Hubbing with no-transcoding method on 6 types of codec (G.711a, G.711u, GSM, G.723, G.729, G.722) and loading of various traffic loads (0 Mbps, 15 Mbps, 40 Mbps, 72 Mbps) and transcoding method on combination at 72 Mbps only.

The results of QoS performance (delay, Mean Opinion Score, packet loss, throughput) obtained from the simulation results of each model of codec are analyzed using VOIP server Asterisk 11 and Microsip 3.17.3 for SIP phone also Wireshark 2.2.4 to assess the performance. One-way delay QoS value refers to the standard in ITU-T G.1010. From the simulation results, it is obtained that for overall traffic load up to 72 Mbps, Peering model is the best alternative IP interconnect model technically and the usage of G.729 codec was the best performance codec with the minimum delay value and the biggest MOS and in transocding methode by using hubbing combination codec G.711 with G.729 have best performance value, thus it was the most recommended for used in the IP interconnection implementation. Therefore by looking at the overall results and with peering and hub topology mapping as in the simulation in technically using peering technology up to 72 Mbps has better, but the resulting value is not much different with hubbing and it have add value in economically tends to reduce costs and the number of PoI.

Keywords: IP interconnection, Codec, Peering, Hubbing, Quality of Service