

ABSTRACT

To improve the performance of a network Internet Protocol (*IP*) *multimedia* is efficiency Bandwidth needs. Some of the technologies developed to achieve these needs, such as IP multicast system. Their use can provide quality assurance services that better than Unicast. Election system between multicast and multiple unicast must provide better performance and avoid the problems caused by price and Bandwidth.

In this final task designed modeling IPTV multicast, and multiple unicast IPTV network using IP Multimedia Subsystem and RTP (Real Time Protocol) on the transport protocol for sending data on a large number of recipients. Network modeling is done by using software simulation *network simulator-2 (NS-2)*.

With the study analysis multicast IPTV and multiple IPTV are expected with lower demand Bandwidth. Efficiency intended Bandwidth allocation result includes the addition of users, codec rate, and capacity link on the IPTV network.

From test and analysis obtained the minimum average delay of 32.5999 ms for the measurements with bit rate 1024 kbps, 10 Mbps link capacity and the number of users 10 . Maximum jitter value of 1.35932, for the measurement of the number of users 10 and bit rate 128 kbps. Results are still under and also still in the maximum threshold by ITU-T and Cisco, and concluded that this system is function properly, and multicast had more bandwidth efficiency than multiple unicast.

Keywords: *Bandwidth, IP multicast, RTP, NS-2, IMS.*