

## ABSTRACT

Today the development of computer network technology is increasing rapidly in line with community needs for services that utilize computer networks. One type of service can be accessed by using computer network technology is the video. On a computer network system, the protocol is a most important part. Commonly using network protocol IPv4 (Internet Protocol version 4). But over time, the allocation of IPv4 addresses that have not sufficient anymore, so developing an IP Next Generation or better known as IPv6 (Internet Protocol version 6) is the solution. To be able to use the IPv6 network then made a new routing protocols include RIPng (Routing Information Protocol next generation) and OSPFv3 (Open Shortest Path First version 3). Both routing protocol were chosen because they have fundamental differences that RIPng is a Distance Vector Routing Protocol, while an OSPFv3 Link State Routing Protocol.

In this final project, the mechanism in determining the route was analyzed and also compared the performance of video services that were simulated using OPNET (Optimized Network Engineering Tool). The scenarios are using the link with the same speed and the different speed. Performance is analyzed based on the video service parameters jitter, delay, packet loss, and throughput.

In this research showed that RIPng determine the route based on the number of hops while OSPFv3 based on the calculation of bandwidth. While for the performance in video services, the both of routing protocol do not have significant differences. When using the same link speed, RIPng has a greater throughput of about 2 packets when compared to OSPFv3. While packet loss, delay, and jitter is smaller than OSPFv3. When using a different link speed, OSPFv3 is superior in terms of delay, because choosing a route with a faster link. From these results it can be concluded that the routing protocol is balanced in terms of the performance due to the difference obtained is not very significant.

**Key words: IPv6, RIPng, OSPFv3, Video, OPNET**