ABSTRAK

Layanan *video streaming* terus berkembang dengan pesat. Mengakses *video streaming* diperlukan arsitektur jaringan komputer yang baik untuk meningkatkan kualitas layanan. Jaringan komputer dapat saling terhubung dengan adanya teknologi *routing*, salah satu *protocol routing* dinamis yaitu *Interior gateway protocol* (IGP). IGP terdiri dari *protocol routing* RIPv2 berbasis *Distance Vector* dan *protocol routing* OSPF berbasis *Link state*.*video streaming* mengalami pertumbuhan pesat, sehingga memerlukan arsitektur jaringan komputer yang andal untuk menjamin kualitas layanan. Koneksi antar jaringan komputer dapat diwujudkan melalui teknologi *routing*, salah satunya adalah *Interior gateway protocol* (IGP). IGP mencakup *protocol routing* dinamis seperti OSPF berbasis *Link state* dan RIPv2 berbasis *Distance vector*. Tujuan dari penelitian ini untuk menerapkan serta mengetahui komparasi kinerja *protocol routing Link state* (OSPF) dan *Distance Vector* (RIPv2) dan berbasis *wireless* pada arsitektur *video streaming*. Tahapan penelitian menggunakan metode *plan, prepare, design, implement, operate, optimize* (PPDIOO) yang dikembangkan oleh Cisco. Berdasarkan hasil pengujian kinerja protokol *routing* OSPF dan RIPv2, pada kondisi tanpa interferensi, OSPF memiliki nilai *throughput* sebesar 2,6277 Mbps dan RIPv2 sebesar 2,6086 Mbps, sehingga OSPF unggul sebesar 0,73%. *Packet loss* OSPF sebesar 1,17%, sedangkan RIPv2 mencapai 1,87%, yang berarti *packet loss* OSPF lebih rendah sebesar 37,43%. *Delay* OSPF tercatat sebesar 3,128 ms dan RIPv2 sebesar 3,385 ms, sehingga OSPF memiliki *delay* lebih singkat sebesar 7,59%. Nilai *jitter* OSPF adalah -0,000334156 ms, sedangkan RIPv2 sebesar 0,002572603 ms, menunjukkan *jitter* OSPF lebih kecil sebesar 113,00% dibandingkan RIPv2. Setelah interferensi diterapkan, *throughput* OSPF adalah 2,5735 Mbps dan RIPv2 sebesar 2,554 Mbps, sehingga OSPF unggul sebesar 0,76%. *Packet loss* OSPF tercatat 3,18% dan RIPv2 sebesar 3,91%, lebih rendah sebesar 18,67%. *Delay* OSPF sebesar 3,774 ms dan RIPv2 3,992 ms, lebih singkat sebesar 5,46%. *Jitter* OSPF sebesar -0,0037008 ms dan RIPv2 -0,002925778 ms, lebih kecil RIPv2 sebesar 26,48%. Pada saat dilakukan pemutusan koneksi (*cutoff*), *throughput* OSPF turun menjadi 1,8014 Mbps dan RIPv2 hanya 0,6514 Mbps, yang menunjukkan keunggulan OSPF sebesar 176,49%. *Packet loss* OSPF tercatat sebesar 31,70%, sedangkan RIPv2 mencapai 75,70%, lebih rendah sebesar 58,12%. *Delay* OSPF sebesar 4,568 ms dan RIPv2 sebesar 13,23 ms, lebih singkat sebesar 189,62%. *Jitter* OSPF sebesar -0,702716406 ms, sedangkan RIPv2 sebesar -9,841857961 ms, sehingga *jitter* OSPF lebih kecil sebesar 92,86%.

Kata Kunci: *Distance vector*, *Interior gateway protocol*, *Wireless Network*, TIPHON, *Video streaming*

ABSTRACT

Video streaming services are experiencing rapid growth, necessitating a robust computer network architecture to ensure quality of service. The interconnection between computer networks is made possible by routing technologies, one of which is the Interior Gateway Protocol (IGP). IGP encompasses dynamic routing protocols such as the link-state-based OSPF and the distance-vector-based RIPv2*. The objective of this research is to implement and compare the performance of the link-state (OSPF) and distance-vector (*RIPv2*) routing protocols on a wireless-based architecture for video streaming. The research stages utilized the Plan, Prepare, Design, Implement, Operate, and Optimize (PPDIOO) methodology developed by Cisco. Based on the performance test results under no-interference conditions, OSPF had a throughput of 2.6277 Mbps and* RIPv2 *had 2.6086 Mbps, making OSPF superior by 0.73%. OSPF's packet loss was 1.17%, whereas* RIPv2*'s was 1.87%, meaning OSPF's packet loss was 37.43% lower. The delay for OSPF was recorded at 3.128 ms and for* RIPv2 *at 3.385 ms, indicating OSPF's delay was 7.59% shorter. The jitter value for OSPF was -0.000334156 ms, while for* RIPv2 *it was 0.002572603 ms, showing OSPF's jitter was 113.00% smaller than* RIPv2*'s.After interference was introduced, OSPF's throughput was 2.5735 Mbps and* RIPv2*'s was 2.554 Mbps, with OSPF outperforming by 0.76%. OSPF's packet loss was recorded at 3.18% and* RIPv2*'s at 3.91%, a reduction of 18.67%. OSPF's delay was 3.774 ms and* RIPv2*'s was 3.992 ms, making it 5.46% shorter. OSPF's jitter was -0.0037008 ms and* RIPv2*'s was -0.002925778 ms, a 26.48% smaller value for* RIPv2*.During a connection cutoff, OSPF's throughput dropped to 1.8014 Mbps while* RIPv2*'s fell to just 0.6514 Mbps, demonstrating OSPF's superiority by 176.49%. OSPF's packet loss was recorded at 31.70% compared to* RIPv2*'s 75.70%, making it 58.12% lower. OSPF's delay was 4.568 ms and* RIPv2*'s was 13.23 ms, a* 189,62*% shorter delay. OSPF's jitter was -0.702716406 ms, whereas* RIPv2*'s was -9.841857961 ms, resulting in OSPF's jitter being 92.86% smaller.*

Keywords: Distance vector, Interior gateway protocol, Wireless Network, TIPHON, Video streaming