

ABSTRACT

COMPARISON ANALYSIS OF QoS (Quality of Service) ON OSPF AND RIP NETWORKS USING BIRD ROUTING ON GNS3

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In the current era of technology, the use of the internet has become increasingly important for society in various aspects of life such as work, education, and economy. To meet these needs, efficient management of packet data delivery through routing protocols is crucial. This research focuses on the utilization of routing protocols in computer networks, specifically OSPF (Open Shortest Path First) and RIP (Routing Information Protocol). OSPF is a highly efficient routing protocol that uses the link-state method to deliver route information effectively. On the other hand, RIP is a routing protocol that is easy to configure and utilizes the distance vector method. For this study, we employ an open-source router called BIRD Internet Routing Daemon as a virtual router on personal computers. The GNS3 software is used as a network simulator to test the performance of OSPF and RIP. Quality of Service (QoS) analysis is conducted to measure the service quality, including metrics such as delay, jitter, throughput, and packet loss. The objective of this research is to examine and compare the performance of OSPF and RIP in delivering packet data within computer networks. By utilizing open-source routers and network simulators, this study provides an efficient and cost-effective solution for implementing and analyzing these routing protocols. The network testing in this study was conducted using TIPHON standardization with parameters such as delay, jitter, throughput, and packet loss to evaluate the tested networks. The results of the testing revealed the delay for UDP transmission, with RIP having a value of 0.76 ms, and OSPF having a value of 0.98 ms. In terms of TCP transmission delay, OSPF outperformed RIP, with values of 63.6 ms and 65.6 ms, respectively. The jitter for RIP was found to be 0.2342 ms, whereas OSPF had a jitter value of 0.3937 ms. Moving on to throughput, for UDP transmission, RIP achieved a throughput value of 1,078.4 kbps, while OSPF achieved a slightly lower value of 1,077.2 kbps. For TCP throughput, RIP obtained a value of 19,634.1 kbps, whereas OSPF showed superior performance with a value of 20,757.7 kbps. Throughout the testing, no lost packets were detected, resulting in a packet loss parameter with a value of 0%, indicating an excellent performance in this regard.

Keywords : BIRD Routing, QOS, Routing, Open Source, OSPF, RIP