ABSTRACT

The approach of Software Defined Networking (SDN) has become one of the key paradigms in modern network processing. SDN offers greater flexibility and control over network infrastructure, allowing network administrators to monitor and manage the network more dynamically. To ensure optimal network performance and user experience in an SDN environment, Quality of Service (QoS) is essential. QoS refers to the network's ability to provide better service to certain network traffic. This research conducts a QoS test on SDN using the Ryu controller. The methodology used for this research is Prepare, Plan, Design, Implement, Operate, and Optimize (PPDIOO). The first test involves communication between *host*, with 3 *host*, 7 *host*, and 13 *host*. Following this, bandwidth settings are tested at 10Mbit/s, 100Mbit/s, 500Mbit/s, and 1Gbit/s. The results of the first test show average QoS data with bandwidth ranging from 99.0 to 99.7 Mbits/sec, *Jitter* ranging from 0.002 to 0.017 ms, throughput approaching the maximum value, approximately 94.45 to 95.14 Mbits/sec, and very low packet loss, with a maximum value of 0.91%. The QoS conditions of the SDN with the Ryu controller under normal traffic demonstrate good network performance. In the second test, network traffic is disrupted by a Distributed Denial of Service (DDoS) attack. Under these conditions, the QoS of the SDN experiences a significant performance decline, with average bandwidth dropping from 989 Mbits/sec to 181 Mbits/sec, *Jitter* remaining low at 0.001 to 0.002 ms, throughput decreasing from 921.28 Mbits/sec to 168.7 Mbits/sec, and packet loss increasing sharply from 1.12% to 11%. The DDoS attack severely impacts network performance, resulting in a significant loss of data packets.

Keyword ; **DDoS, PPDIOO, QoS, Ryu Controller, SDN**