

## **ABSTRACT**

Server Resource limitations are generally an obstacle affecting the quality of service (QoS) due to increased traffic levels. Therefore, Load Balancing is needed to manage service requests to the optimal application server. Software-Defined Network (SDN) has advantages in controlling the network which can be exploited with various load balancing strategies that are used to distribute traffic loads to improve overall system performance. The Performance for load balancing can be improved by selecting the server with minimum load using Fuzzy Logic Algorithm. Traditional load balancing lacked the usage of device state data. In this study, an SDN-based Server Load Balancing method using fuzzy logic methods has been performed. Fuzzy Logic Algorithm successfully delivers HTTP requests to lowest load server based on Distribution Server Index for High Load Scenario. In High Load Scenario testing, the server load must be directed at the lowest server weight so that each server should not be overloaded. In testing with a http request ranging from 100 - 500, Fuzzy algorithm imposes more traffic distribution on the 3<sup>rd</sup> Server with the lowest server load. In CPU usage test, the fuzzy logic algorithm has lowest average value namely 39%. In RAM usage test, the fuzzy logic algorithm has lowest average value namely 54%. In throughput test, the fuzzy logic algorithm has the highest average value namely 2KBps. The Fairness Index of Fuzzy Logic is 0.45 while Round Robin's fairness index is 0.99. Round Robin Algorithm can outperform other algorithms in terms of Fairness Index, as the fairest algorithm.

Keywords: Software Defined Network (SDN), Load Balancing, Fuzzy Logic Algorithm