

ABSTRACT

At this time the development of computer networks is very rapid and increasing the complexity of the network, with the challenge arises a technology namely Software-Defined Network (SDN). SDN is the latest breakthrough in modern network modeling where control planes and data planes have been created separately. SDN networks, especially using Open Network Open System (ONOS) controllers, do not provide a firewall to protect their networks from attacks.

In this study with this problem, we designed a system that improves the security system of a computer network by using a firewall placed on a web server connected to the SDN network. Then do the test by attacking the web server that has been installed firewall with a denial of service (DOS) attack. In this study the controller used is an ONOS controller.

In this final project has successfully designed a stateless firewall on the SDN network. To determine the effect of stateless firewall performance, test simulations are conducted between scenario 1 and scenario 2 using throughput parameters, response time, packet loss, and CPU utilization. Throughput test results, in scenario 2 is more optimal with values when the client makes 100 requests, 200 requests, and 300 requests of 4.09 KB / s, 8.42 KB / s, and 8.58 KB / s. The results of the response time test, in scenario 2 is more optimal with values when the client makes 100 requests, 200 requests, and 300 requests of 7.63 s, 5.5 s, and 5.42 s. Packet loss test results, in scenario 2 is more optimal with values when the client makes 100 requests, 200 requests, and 300 requests of 13.75%, 16.9%, and 18.55%. Cpu utilization test results, in scenario 2 is more optimal with values when the client makes 100 requests, 200 requests, and 300 requests of 5.06%, 5.6%, and 6.02%.

Keywords: *Software-defined network (SDN), firewall, ONOS controller, Denial Of Service (DOS).*