

ABSTRACT

COMPARISON ANALYSIS OF QOS IN PFSENSE AND OPNSENSE USING LOAD BALANCING METHOD ON BITBOX

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Internet consumption in Indonesia from 2018 to 2022 has increased, with 210 million people actively using the internet out of a total of 272.682 million people based on the Association of Indonesian Internet Service Providers. This increase is indicated by the percentage of internet penetration which increased by 77.02%. Internet services are considered important because they provide information quickly and efficiently. In order to be able to access the internet, an Internet Service Provider is required that provides connections via telephone, fiber optic, or wireless networks. In addition to the increase in the number of internet users, there has also been an increase in the provision of new ISP services. The availability and quality of internet services will affect people's interest in using them. Therefore, it is necessary to pay attention to bandwidth management by using a Load balancing mechanism for two ISP services which are used to divide network traffic loads through several available gateways so that they are not concentrated on one internet service provider and make pfSense and OPNsense as load balancers because both systems are open, source and configurable via the web and flexible and supports Load balancing. This research will compare the Load balancing performance of the pfSense and OPNsense routers on the Bitbox Open Network Appliance, which is expected to provide information about the performance of the three routers. From the results of the research conducted, it was found that the PfSense load balancing system is better than OPNsense load balancing based on QoS values and CPU resource usage in PfSense is higher than OPNsense, but RAM usage in PfSense is lower than OPNsense. In pfSense the throughput value is 4.926 kbps, Packet loss is 0.48%, delay is 1.725337 ms and jitter is 0.004521 ms, in OPNsense it also gets a throughput value of 3.454 kbps and Packet loss of 0.57% but the delay value is higher than pfSense with a value of 2.198992 ms and jitter of 0.007157 ms.

Keyword: *Bandwidth, Bitbox, Load balancing, Pfsense, Opnsense*