ABSTRACT

Network Function Virtualization (NFV) is a technology that is still new in Indonesia. With this technology the NFV network operators in Indonesia may develop revenue growth because of the NFV can reduce spending and capital expenditure towards the operational costs of the network device.

To run the Network Function Virtualization needed a hypervisor which regulates the management of the hardware being used. The hypervisor used in this research is the bare-metal hypervisor (Xen Project). At NFV, network device used was made one on a virtual server so that desperately needed firewall in the NFV. In this research, virtual firewall used is pfSense, OPNsense, and IPFire.

The third virtual firewall will run on the XEN hypervisor and performed an analysis of the performance later compared to vritual router. Virtual router being used is VyOS. Performance analysis of the VNF fourth will be based on RFC 2544 that is throughput, latency, packet loss, Denial of Service (DoS) handling based on RFC 3511 in the IETF and with added performance analysis on jitter and CPU usage.

From the analysis results obtained when testing the parameters of that throughput, latency OPNsense have better results than any other time without VNF background traffic while on the parameters of latency and jitter IPFire value is best when testing without the background traffic and when testing with background traffic, IPFire has a better value on a parameter of throughput, packet loss, latency, and jitter. At the time of DoS attacks, and throughput parameters on packet loss, the best value is present on the OPNsense while on the parameters of latency and jitter best values contained on the IPFire. And on testing CPU usage, IPFire has better value at the moment without the background traffic, with background traffic, as well as in the event of a DoS attack.

***Keyword** : NFV, virtual firewall, pfSense, OPNsense, IPFire, VyOS*