

ABSTRAK

Salah satu implementasi jaringan *wireless* yang sangat populer yaitu teknologi jaringan *Wireless Lokal Area Network* (WLAN) atau dikenal dengan *Wireless Fidelity* (Wi-Fi). Kinerja jaringan yang berkualitas dan performansi yang baik pada jaringan Wi-Fi dipengaruhi oleh banyak faktor. Faktor yang mempengaruhi dari sisi *user* yaitu pergerakan *user* mendekati dan menjauhi *access point* pada saat mengakses internet menggunakan jaringan Wi-Fi dengan kecepatan yang berbeda akan mendapat kualitas dan performansi yang bervariasi. Faktor dari sisi *user* berpengaruh terhadap parameter *Quality of Service* (QoS) di jaringan Wi-Fi. Parameter QoS pada jaringan Wi-Fi yaitu *packet loss*, *delay*, *jitter*, *throughput*. QoS yang diperoleh dari pergerakan *user* di jaringan Wi-Fi dapat diketahui dari simulasi yang dirancang pada *software* OPNET Modeler 14.5. Pengamatan pengaruh mobilitas *user* terhadap parameter *QoS* di Wi-Fi dilakukan pada layanan HTTP, FTP, dan *video conferencing*. Hasil simulasi dari ketiga kecepatan mobilitas, nilai tertinggi parameter *packet loss*, *delay*, *jitter* pada kecepatan 1,6 m/s dan nilai tertinggi parameter *throughput* pada kecepatan 0,6 m/s. Nilai tertinggi *packet loss* pada layanan FTP sebesar 0,011590307%, layanan HTTP sebesar 0,009656612 % dan layanan *video conference* sebesar 0,654249439 % berdasarkan standarisasi ETSI termasuk dalam

rentang 0% - 3% dengan kategori sangat bagus. Nilai tertinggi parameter *delay* sebesar 1,199224675 ms berdasarkan standarisasi ETSI termasuk target nilai ≤ 150 ms dengan kategori sangat bagus. Nilai tertinggi parameter *delay variation* sebesar 7,007708769 ms berdasarkan standarisasi ETSI termasuk target nilai < 75 ms dengan kategori sangat bagus. Parameter *throughput* mempunyai nilai tertinggi sebesar 165582,4854 bps masuk dalam standarisasi 802.11g dengan nilai *throughput* maksimal sebesar 24700000 bps.

Kata Kunci: Wireless Fidelity (Wi-Fi), mobilitas, packet loss, delay, jitter.

ABSTRACT

One implementation of a wireless network is a very popular wireless networking technology Local Area Network (WLAN) or better known as Wireless Fidelity networks (Wi-Fi). Network performance qualified and good performance on network technology Wireless Fidelity (Wi-Fi) is influenced by many factors. Factors affecting the movement of the user approaching the access point and the user away from access point when accessing the Internet using a Wi-Fi network at different speeds will have varying quality and performance. Factor of the user in turn influence the parameters of Quality of Service (QoS) in Wireless Fidelity network. Parameters of QoS on the network technology Wireless Fidelity (Wi-Fi) are delay, jitter, throughput. QoS obtained from the movement of the user in the network Wi-Fi can be determined from that simulation software OPNET Modeler was designed in 14.5. Observation of the effect of user mobility on the QoS parameters in Wifi performed on HTTP, FTP, and video conferencing. The simulation results of the three-speed mobility, the highest value of the parameter packet loss, delay, jitter at a speed of 1.6 m/s and the highest value of the parameter throughput at speeds of 0.6 m/s. The highest value of packet loss on the FTP service amounting 0.011590307%, the HTTP service amounting 0.009656612% and video conference

services amounting 0.654249439% based on the ETSI standardization included in the range of 0% - 3% with very good category. The highest value of the delay parameter amounting 1.199224675 ms based on the ETSI standardization included the target value ≤ 150 ms with very good category. The highest value of delay variation parameters amounting 7.007708769 ms based on the ETSI standardization included the target value of < 75 ms with a very good category. Throughput parameter has the highest value amounting 165,582.4854 bps included in the standardization 802.11g with the value of the maximum throughput amounting 24700000 bps.

Key Words : Wireless Fidelity (Wi-Fi), mobility, delay, jitter, throughput