

Analisa kinerja dan pengukuran QoS pada simulasi protocol routing IDSAODV untuk meminimalisasi dampak serangan blackhole di jaringan mobile ad-hoc (MANET) = Performance analyze and QoS measurements in simulation of routing protocol IDSAODV to minimize the impact of blackhole attack in the mobile ad-hoc network (MANET).

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Abstrak

Jaringan nirkabel adhoc (MANET) merupakan jaringan yang bersifat sementara, spontan, tidak memiliki infrastruktur dan host (node) yang memiliki mobilitas tinggi dan acak. Setiap node dalam jaringan saling berkomunikasi untuk dapat melewatkan paket dari node sumber ke node tujuan. Metode komunikasi setiap node untuk dapat melewatkan paket diatur oleh protocol routing. Karena MANET tidak memiliki infrastruktur dan tidak ada peran khusus suatu node dalam jaringan (tidak ada node khusus yang memantau aktifitas jaringan), MANET sangatlah rentan terhadap ancaman serangan-serangan keamanan.

Salah satu ancaman tersebut adalah serangan blackhole, blackhole akan selalu mengambil alih jalur pengiriman paket dari node sumber dan membuang paket yang melewatinya. Hal ini menyebabkan paket tidak sampai ke node tujuan dan berdampak pada rendahnya Quality of Service (QoS) terutama pada packet loss. Skripsi ini mensimulasikan serangan blackhole dalam jaringan nirkabel adhoc dan menganalisa performa routing protocol IDSAODV sebagai solusi meminimalisasi pengaruh serangan blackhole melalui pengukuran Quality of Service (QoS).

Hasil pengukuran QoS IDSAODV yang dibandingkan dengan QoS AODV yaitu terjadi penurunan jumlah rata-rata packet loss karena serangan blackhole sebesar 18,65% dan rata-rata total packet loss sebesar 21.67%, peningkatan juga terjadi pada packet delivery ratio sebesar 21.67 % serta penurunan rata-rata end to end delay sebesar 7.71 ms.

Mobile Ad hoc Network (MANET) is temporary network which no infrastructure and also every node in the network has high and random mobility. Every node in the network communicated each other to forwarding data packet from source node to destination. Communication mechanism for every node to forwarding data packet is regulated by routing protocol. Since MANET has non infrastructure network and there is none of special node in the network that can be monitored the whole network activity, MANET is vulnerable and unprotected for security attacks.

One of these attacks is blackhole attack, blackhole is always absorb any packet in the network path and drop every packet which through those node. Thus the data packet cannot be received to the destination node and affected for the worse Quality of service (QoS) especially packet loss. This final assignment simulated blackhole attack in the MANET and also analyze performance of the IDSAODV routing protocol as a solution to mitigating the effect of blackhole attack which measuring of Quality of Service (QoS).

The results of measuring QoS of IDSAODV routing protocol which compared by QoS of AODV routing

protocol that the average of packet loss by blackhole dropping packet was decreasing by 18.65% and the average of all packet loss was decreasing by 21.67 % , the average of packet delivery ratio was increasing for 21.67 % and also the average of end to end delay was decreasing by 7.71 ms.