

Performance Evaluation of AODV Using Blackhole Attack and Tora in MANET

Muhammad Idham Padil¹, Ahmad Yusri Dak²

¹*muhdidham130151@gmail.com*

²*ahmadyusri@uitm.edu.my*

ABSTRACT

MANET are self-contained, multi-hop, wireless, transitory networks that operate under throughput, power, and energy constraints. Mobile wireless networks are more prone to attacks than fixed wireless networks. These networks are vulnerable to security due to unprotected and open wireless broadcast channels and inadequate physical security. Blackhole attacks are active attacks in which the attacking node continuously declares that it has the quickest route to any desired network node, although it does not. Consequently, all packets will travel through it, enabling the blackhole node to forward or delete packets during data transfer. As most studies examine reactive, proactive, or hybrid routing protocols, such as AODV and DSDV or AODV and ZRP, there is also a dearth of research comparing AODV with TORA. This article examines and evaluates the performance of the routing protocol AODV with and without a blackhole attack. Moreover, the throughput, packet delivery ratio, and end-to-end delay of AODV and TORA are compared to evaluate their respective performance. Using Network Simulator 2 (NS2), three scenarios with varying numbers of nodes beginning at 10, 20, 30, 40, and 50 are simulated for a total of 60 seconds. With a lower throughput of 29.19 Kbps, a poorer packet delivery ratio of 1.01%, and a more significant end-to-end delay of 1674.8ms, the results show that AODV with blackhole attack performs worse than without blackhole attack for all performance criteria. AODV outperforms TORA in terms of throughput, packet delivery ratio, and end-to-end delay, according to a performance comparison. This project also could be enhanced for future work by examining or suggesting other network and transport layer security techniques used to prevent these attacks.

Keywords: AODV, TORA, Blackhole, Throughput, Packet delivery ratio, End-to-end delay