

Figure 27. RDL under Blackhole Attack

Figure 28 shows the effect of malicious nodes on the total number of packets sent by all sources for static nodes and for high node mobility. The result shows that the total number of data packets sent by all the source nodes increases in static nodes by 30% than in high mobility nodes and these packets decrease by 15% for each malicious node introduced in the network and this decrease is independent of the node mobility.

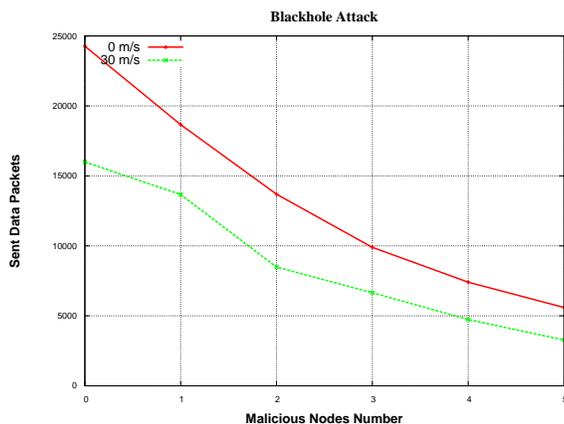


Figure 28. Sent Data under Blackhole Attack

4. Conclusion

In this paper, we analyse the impact of some of the attacks on the AODV routing protocol. The flooding, selfish, grayhole and blackhole attacks are simulated using NS-2 network simulator to study their effects on the performance metrics such as packet delivery ratio, network throughput, end-end-delay, routing overhead, normalized routing load, routing discovery latency and sent data packets.

From the simulation, we conclude that the blackhole and flooding attacks have dramatic impact on all the network metrics while the selfish and grayhole attacks do not affect so much in these metrics because both attacks drop the data

packets which are the major factor in calculating these metrics. While selfish and grayhole attack share the data dropping, the blackhole introduce a fake RREP which affects the network performance and the flooding attack introduces a fake RREQ which affects the network performance as well.

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