

9. Analyse the performance metrics for modified SAODV using to prevent Sybil attack.
10. Compare the performance parameters for AODV under Sybil Attack, IDS AODV and SAODV for 100 nodes, 300 nodes and 500 nodes Scenario

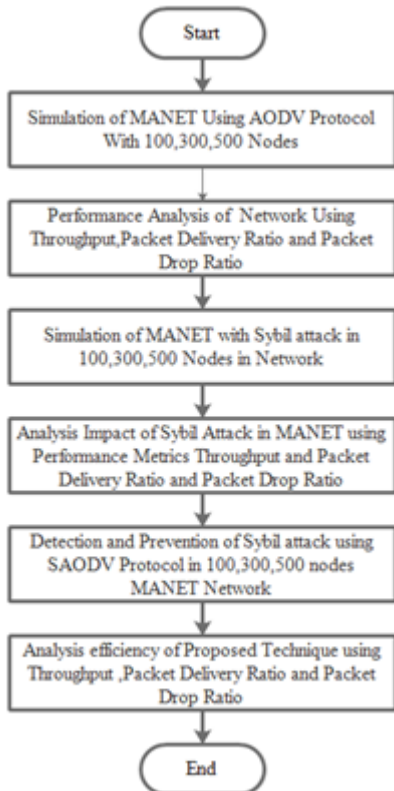


Figure 4.2: Flow Chart of Implementation

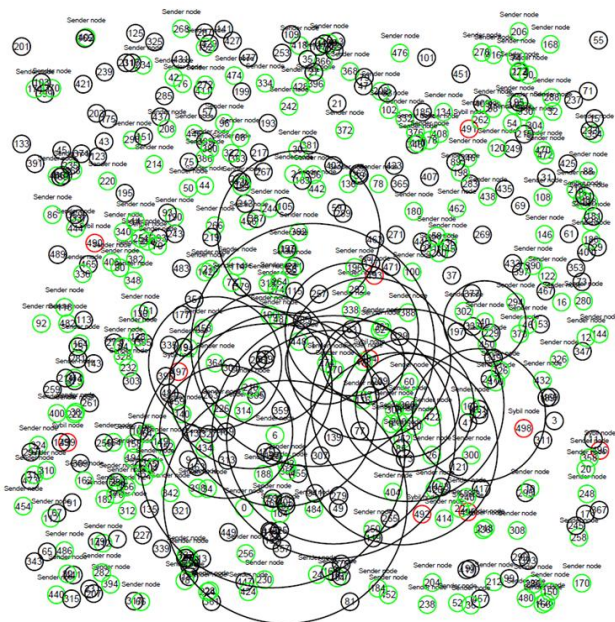


Figure 4.3: Simulation Scenario with 500 nodes in MANET

5. Result Observation

The simulation of the work completed in three scenarios. The configuration of scenarios is based on the number of nodes are deployed and the position of the source node and destination node. Initially all nodes in each scenario are normal and no malicious node is present in the scenario. The standard AODV

routing algorithm is used at routing protocol on network layer. The scenarios are differentiated as per normal scenario, scenario with Sybil nodes and scenario with proposed technique. Impact of performance variation is observed in 100 nodes, 300 nodes and 500 nodes.

Scenario 1: It describes the normal situation of mobile ad-hoc networks with normal AODV routing protocols.
 Scenario 2: It described impact of Sybil Attack and impact of Sybil attack on performance of ad-hoc networks.
 Scenario 3: it implements the proposed technique to detect and prevent Sybil attack in mobile ad-hoc networks.

Figure 5.1 & 5.2 demonstrates the evaluated performance of normal AODV, AODV with Sybil attack and modified AODV with improved performance. The network performance metric is throughput and packet delivery ratio.

Throughput = Total received packets / Total simulation time
 ...Equation (1)

Packet Delivery Ratio = (packets received/packets sent)
 ...Equation (2)

Throughput Graph

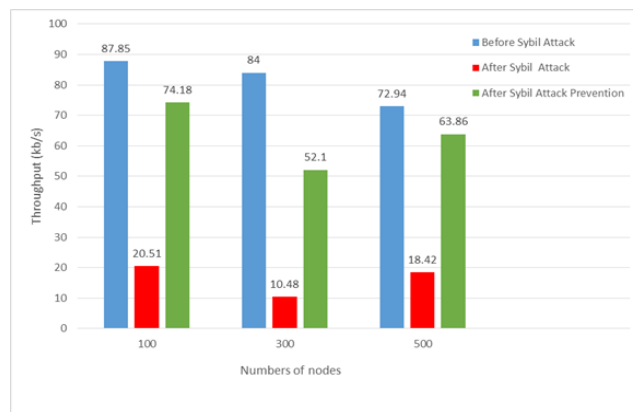


Figure 5.1: Comparison of Throughput in 100, 300, 500 Node Network with Different Scenario

Packet Delivery Ratio Graph

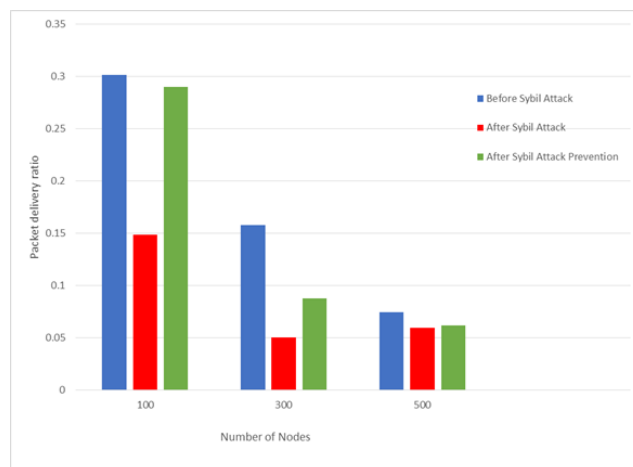


Figure 5.2: Comparison of PDR in 100, 300, 500 Node Network with Different Scenario

Description - Result show in graph describe that before Sybil attack throughput and packet delivery ratio is high and after

Sybil attack, it decrease and after prevention values are restored with some difference due to routing path change and routing packet delivery .In 300, 500 nodes network throughput in 500 nodes network have high throughput after prevention of Sybil attack because of new routing path and low routing overhead.

6. Conclusions

This work proposed SAODV based technique to detect and prevent Sybil attack. To evaluate the performance of proposed techniques, simulation of Sybil attack has been performed. Neighbor node id based Sybil attack deployment has been used. The performance of this approach improves nodes. According to simulation results the proposed techniques show superior performance as Packet delivery ratio and throughput increases. In the analyzed scenario, it is found that the modified Secure AODV has superior performance than AODV. Modified Secure AODV is suitable to detect and prevent Sybil attack. It improves the PDR under attack conditions, with acceptable decrease in throughput due to routing path change and new route.

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