Abstract

In the presence of malicious nodes, one of the main challenges in MANETs is to design a novel, scalable and robust Geographic Multicast Protocol (RSGM) that can protect MANETs from various routing attacks. The vulnerabilities in the RSGM protocol were explored and various attacks like blackhole, wormhole and flooding attack are simulated. Several virtual architectures are used in the protocol without need of maintaining state information for more robust and scalable membership management and packet forwarding in the presence of high network dynamics due to unstable wireless channels and node movements. Specifically, scalable and efficient group membership management is performed through a virtual-zone-based structure, and the location service for group members is integrated with the membership management. Both the control messages and data packets are forwarded along efficient tree-like paths, but there is no need to explicitly create and actively maintain a tree structure. The stateless virtual tree-based structures significantly reduce the tree management overhead, support more efficient transmissions, and make the transmissions much more robust to dynamics. Geographic forwarding is used to achieve scalability and robustness. Differences mechanisms have been proposed using various techniques to countermeasure the routing attack against
MANETs. However, these mechanisms are not suitable for MANETs resource constraints. In a mobile scenario, mesh based protocols outperformed tree-based protocols. The availability of alternate routes provided robustness and scalability. The different routing attacks, such as flooding, blackhole and wormhole are simulated using NS2. 28 version and efficient proactive counter measure is provided using HMAC function which would lead to a drastic change in performance metric like packet delivery ratio, control overhead and end to end delay which is used to prove that the proposed solution was efficient and robust.

Referencess

- Asmaa Adnane and Christophe Bidan, Rafael Timoteo de Sousa Junior "Trust-based countermeasures for securing OLSR protocol"; International Conference on Computational Science and Engineering.
- Hesiri Weerasinghe, Huirong Fu "Preventing Cooperative Black Hole Attacks in Mobile Ad Hoc Network: Simulation Implementation and Evaluation";.

Index Terms

Computer Science Security

Keywords

Blackhole attack  Wormhole attack  Flooding attack  RSGM