



Design and Implementation of Enhanced Secure Field Based Routing in Wireless Mesh Network (WMN)

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Abstract

In many mission critical applications such as troop coordination in a combat field, situational awareness etc. wireless mesh networks are becoming an effective tool. These applications are served by and use the multicast-style of communication traffic. Therefore, authenticating the source and ensuring the integrity of the message traffic become a fundamental requirement for the operation and management of the network. However, the limitation of computation and communication resources, in a large scale deployment and the unguaranteed connectivity to trusted authorities make even the known solutions for wired and single-hop wireless networks inappropriate. This project presents an authentication scheme for multicast traffic for wireless mesh network where it combines the advantages of the time asymmetry and the secret information asymmetry paradigms and exploits network clustering to reduce overhead and ensure scalability. Multicast traffic within a cluster employs a one-way hash function chain in order to authenticate the message source. Cross-cluster multicast traffic includes message authentication codes (MACs) that are based on a set of keys. Each cluster uses a unique subset of keys to look for its distinct combination of valid MACs in the message in order to authenticate the source. The results aims to show greater security to the sender and as well as to the message and to the destination.

Keywords: Wireless mesh networks; Multicast communications; Message authentication
