Node Cooperation Strategy on Security Aided and Group Encounter Prophet Routing Protocol of an Opportunistic Network

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Abstract

There are scenarios in wireless networks where a fully connected path between nodes for communication through a network is not the case and yet nodes still need to communicate freely. Despite concerted efforts to resolve this problem of unconnected wireless nodes trying to relay crucial information, network users still experience significant communication challenges owing to failures or non-existence of critical infrastructural links between nodes and their security challenges. Node cooperation technique was developed and incorporated into the security aided and groups encounter PRoPHET routing protocol with cooperative behavior modelled for three nodes as shown in the cooperative behavior equation. This is in order to improve its security to ensure availability and to resist malicious dropping in OpptNets where a node may refuse to act as a relay and only settle for sending and receiving its own data or information, thus, causing considerable delay degradation in the network. Results demonstrated that, the node cooperation improved the security aided and group encounter PRoPHET routing protocol as it improved the delivery probability by 25.7%, reduced the latency by 13.10%, improved the hop count by 62.9%, and improved the buffer time by 55.5% at the end of the
simulation time when compared with the delivery probability, latency, hop count and buffer time of the security aided and group encounter PRoPHET routing protocol without node cooperation.

References


Index Terms

Computer Science

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Keywords

PRoPHET routing protocol, node cooperation, post disaster communication network