

MANET: An Alternative Approach to Reduce Flooding by Propagating Neighborhood Information

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ABSTRACT

Mobile Ad Hoc Networks (MANETs) exemplify a complex distributed network, which is characterized by the lack of any infrastructure. The lack of infrastructure though on one hand purports many significant advantages over the infrastructure-based networks, these networks have additional constraints that conventional networks do not have. For example, the connection establishment is costly in terms of time and resource where the network is mostly affected by connection request *flooding*. The proposed approach presents a way to reduce flooding in MANETs. Flooding is dictated by the propagation of connection-request packets from the source to its neighborhood nodes. The proposed architecture embarks on the concept of sharing neighborhood information. The proposed approach focuses on exposing its neighborhood *peer* to another node that is referred to as its *friend-node*, which had requested/forwarded connection request. If there is a high probability for the friend node to communicate through the exposed routes, this could improve the efficacy of bandwidth utilization by reducing flooding, as the routes have been acquired, without any broadcasts. *Friendship* between nodes is quantized based on empirical computations and heuristic algorithms. The nodes store the neighborhood information in their cache that is periodically verified for consistency. Inconsistent routes are erased rather than being updated after a *record-validity* period. The vicinity information is tracked based on a -- *I'm alive* signal to other nodes. These broadcasts are limited to a hop count of *one* and executed when the network activity is feeble.