Abstract

This paper proposes a robust and energy efficient Highly Scalable Zone based Multicast Protocol (HSZMP) to achieve high scalability with reduced control overhead even under high dynamic mobility and large network size. This work constructs a virtual-zone-based structure in order to reduce the overhead for route discovery and maintenance of the tree structure. The position information of the node is utilized to construct the zone, multicast tree, and multicast packet forwarding. This work proposes a bi-directional multicast packet forwarding to forward the data packet along the constructed multicast tree with reduced transmission overhead. The proposed work dramatically improves the scalability even under large network and group size. This work introduces an adaptive zone handling technique to handle the empty zone problem under frequent topology changes. Furthermore, it deploys two novel mechanisms such as Broadcast from Beacon Only (BBO), and Redundancy Reducing Flooding Mechanism (RRFM) to reduce the redundant overhead perfectly for achieving scalability. The simulation results demonstrate that proposed HSZMP is an effective protocol compared to Scalable Position-Based Multicast (SPBM) in terms of packet delivery ratio, control overhead, and scalability.
A Highly Scalable Zone based Multicast Protocol for Redundant Overhead Minimization

References

A Highly Scalable Zone based Multicast Protocol for Redundant Overhead Minimization


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