Performance Analysis of MAC Layer using Multicast Routing over Resource Constrained Ad Hoc Networks

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Abstract

Group communication over multicast ad hoc network suffers from insufficient utilization of limited resources, i.e. shared channel, battery, data processing capabilities and storage space, etc. Multicast routing protocol should be able to manage all these resources because their consumption depends upon different factors, i.e. Unicast/Multicast network operations, dynamic topology due to mobility, control overhead due to scalability, packet loss and retransmission due to collision and congestion etc. All these factors may cause unnecessary network load, delay and unfair resource utilization. However, multicast ad hoc routing protocols are more efficient than Unicast routing protocols, but they also suffer from performance degradation factors discussed above. Researchers have developed various layer wise solutions for resource optimization. In this paper, we will explore the different schemes for fair utilization of network resources and also perform a simulation based analysis to investigate the impact of MAC layer over the performance of multicast routing protocols and network resources.

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Index Terms

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