



RESEARCH ARTICLE

CLUSTERING APPROACH FOR FAST ENERGY EFFICIENT DATA COLLECTION IN WIRELESS SENSOR NETWORK

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Abstract— Most of the wireless sensor networks are deployed for data forwarding to the sink node. The main problem in wireless sensor network is the lifetime of the network and the data collection rate. The sensor node resources are limited that depends on the battery. So it is important to utilize its power efficiently. The data collection rate of a wireless sensor network is important for safety mission control applications where sensor nodes are deployed to detect oil/gas leak or structural damage. In this paper, we study efficient data collection in wireless sensor networks. We propose a method on cluster based routing and adaptive two-level scheduling for the data collection in wireless sensor network. We first form the clusters based on the node density then assign BFS timeslot scheduling within cluster and multichannel assignment between the sink nodes and clusterheads. Our design exploits the hierarchical structure of powerful cluster heads and the optimized multiple paths along with the adaptive scheduling to support reliable, high-throughput, and energy-efficient data transmission in wireless sensor networks. The simulation results show that our proposed fast energy efficient data collection method improves the lifetime and the data collection rate of the network.

Key Terms: - Cluster; Two level scheduling; BFS Timeslot scheduling; Multichannel assignment

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