Abstract

Broadcasting plays an important role in the communication protocol design and it acts as a fundamental operation in wireless sensor network (WSN). This paper investigates the Minimum Latency Broadcast Scheduling in Duty Cycled (MLBSDC) problem in WSN. The MLBSDC problem aims to find a broadcast scheduling that minimizes the time in which the last node receives the broadcast message with minimum collision. The focus is mainly on providing minimum collision and finding the lower bound of broadcast latency. In this paper, a novel algorithm Collision Optimized Broadcast Scheduling (COBS) is proposed which is a refinement of Effective Broadcast Scheduling with Optimized Latency (EBSOL) [9] algorithm. COBS allow nodes in different layers of the broadcast tree to transmit the message simultaneously. In EBSOL, the latency is efficiently reduced by layer by layer approach and the broadcast tree is constructed. It is proved that COBS produces a latency of at most 12 |T|, where T denotes the number of time slots in a scheduling period. To prevent collision, each node maintains an effective routing table and only one parent node transmits the message to the child node. The results from extensive simulation show that COBS has a better performance than the existing One To All Broadcast (OTAB) algorithm in terms of reduction in latency, number of transmission and collision.
References


Index Terms

Computer Science Wireless

Keywords

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