Abstract

In wireless sensor networks (WSNs) energy efficiency becomes one of the core problems due to low power support for the resource-limited sensor nodes. A medium access control (MAC) protocol directly controls the communication module, so the MAC protocol has important effect on the nodes energy consumption. The major energy waste in WSNs includes collision, overhearing, idle listening, control packet overhead and over-emitting. Most of the existing power saving protocols achieves power savings by periodically putting sensor nodes to sleep. Such a regular sleep/awake mechanism fails to adjust a sensor nodes sleep duration based on its traffic load, thus causing either lower power efficiency or higher latency. We scheduled the sleep duration of nodes based on their traffic load. Also by using the concept of contention, node is able to utilize the time slots of its neighboring nodes. The concept of a Grid Based Quorum Energy-Saving MAC Protocol is utilized for energy efficiency.

Keywords: Wireless Sensor Network, MAC protocol