Abstract

The energy of the node in the Wireless Sensor Networks (WSNs) is scarce and causes the variation in the lifetime of the network. Also, the throughput and delay of the network depend on how long the network sustains i.e. energy consumption. One way to increase the sustainability of network for improving bandwidth utilization and energy consumption is the introduction of heterogeneous nodes regarding energy, and the other is to use the slotted
transmission schemethat allow nodes to regularly schedule the activities. Also, clock skews may cause the errors and be one of the source of delay and energy consumption. To improve the QoS parameters, the paper proposes Node Heterogeneity-aware Bandwidth Efficient Hybrid Synchronization Algorithm (NHBES). It works on the formation of cluster-based spanning tree (SPT). The nodes in the cluster and cluster heads in the network are synchronized with the notion of the global time scale of the network. To minimize the energy consumptions and delay, NHBES synchronizes the time slots using TDMA based MAC protocol. The hybrid approach used helps to improve the throughput (bandwidth utilization), energy consumption with less delay as compared to the state-of-the-art solutions.

References

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