Beaconless Multihop Routing Protocol for Wireless Sensor Networks

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Abstract

Routing is a major challenge in sensor networks, due to constrained resources of energy, processing power, and memory. This proves that there is an urgent need to design energy efficient routing protocols for sensor networks for prolonging network lifetime. This paper presents a new beaconless multihop routing algorithm (BMR) for wireless sensor networks which is light weight, energy efficient and makes routing decisions based on residual energy of nodes. Additionally BMR is a non-positioned beaconless routing protocol which eliminates the overhead of control messages exchanged during network setup in cluster based routing protocols. The proposed protocol first divides the whole network into different zones using message passing techniques by Base Station (BS) and performs energy efficient location base routing without taking any assumption of location services. A simulation-based evaluation is conducted to compare the performance of BMR against energy efficient protocol with static clustering for wireless sensor networks (EEPSC). Simulation results show that BMR performs better than EEPSC in terms of network lifetime and energy consumption minimization.