Abstract

Wireless sensor networks (WSNs) emerge as underlying infrastructures for new classes of large scale networked embedded systems. However, WSNs system designers must fulfill the Quality-of-Service (QoS) requirements imposed by the applications (and users). Very harsh and dynamic physical environments and extremely limited resources are major obstacles for satisfying QoS metrics such as reliability, timeliness, and system lifetime. The limited communication range of WSN nodes, link asymmetry, and the characteristics of the physical environment lead to a major source of QoS degradation in WSNs. This paper proposes a Real-Time Traffic-Differentiated Routing protocol for Wireless Sensor Networks (WSNs). It targets WSN applications having different types of data traffic with several priorities. The protocol achieves to increase packet reception ratio and reduce end-to-end delay while considering multi-queue priority policy, two-hop neighborhood information, link reliability and power efficiency. The protocol is modular and utilizes memory and computational effective methods for estimating the link metrics. Numerical results show that the proposed protocol is a feasible solution to addresses QoS service differentiation for traffic with different priorities.
References

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Index Terms

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Keywords

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