Abstract

Wireless sensor networks (WSNs) are special types of networks used in information gathering in military, industrial, and surveillance applications. Many such applications of WSNs require Quality of service (QoS) in terms of high bandwidth for real time applications including multimedia audio and video without much delay. These applications demand high packet delivery ratio and are extremely delay-sensitive. However, certain factors limit the ability of the multihop WSNs to achieve the desired goals. These factors include the delay caused by network congestion in the network, limited energy of the sensor nodes, packet loss due to collisions and link failure. In this paper, we propose an optimized bandwidth adaptation and utilization algorithm for real time applications in WSNs. The problem is formulated as linear programming (LP) together with specified constraints. Three types of applications (applications with strict delay requirements, applications with less stringent delay constraints and applications with delay tolerant capabilities) are considered for demonstration. Our claim is well supported with the simulation results carried on OMNET++ simulator.

Reference

Index Terms

Electronics

Wireless Sensor Networks
Key words

Bandwidth consumption
Real time
applications
wireless sensor network