Mobile Wi-Fi based Scheduling for Body Area Networks

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Abstract

Recently, Wireless Sensor Networks (WSNs) have significantly helped in evolving the provision of healthcare services. Wireless Body Area Networks (WBANs) have helped in healthcare service improvement. However, this has also created various research challenges such as Quality of Service (QoS) support. IEEE 802.11e Wireless Local Area Networks (WLANs) based on CSMA/CA (Carrier Sense Multiple Access with Collision Avoidance) specify standards for MAC (Medium Access Control) protocols to support QoS in wireless networks. EDCF (Enhanced Distributed Coordination Function) is a contention-based channel access scheme. In this paper, an Optimized QoS (OQ) scheduling scheme with Mobile Wi-Fi connectivity is proposed for QoS differentiation. The scheme makes use of two different biosensors types and the optimum CW (Contention Window). Initially at MAC layer, CW is set to optimize CWmin based on the sensor priority class for patient monitoring. Furthermore, less end-to-end packet delay is ensured for high priority critical sensor data, which improves QoS performance. Through simulation, it is shown that the proposed approach provides QoS guarantee to high priority sensor data traffic. Results obtained indicate that OQ outperforms the DQ (default
Quality of service) other conventional approaches.

References


Index Terms

Computer Science Wireless
Keywords

IEEE 802.11 MAC, IEEE 802.11, QoS, EDCF, CWmin, Mobile Wi-Fi, Scheduling