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Traffic aware wireless sensor networks MAC protocol for smart grid applications using spiral backoff mechanism (Conference Paper)

Ahmed, M.M. ✉, Bari, S.M.S. ✉, Habaebi, M.H. ✉, Khan, S. ✉, Anwar, F. ✉

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Abstract

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IEEE 802.15.4 standard provides a low cost, low power wireless sensor network solution for smart grid communication networks. This standard uses slotted Carrier Sense Multiple Access-Collision Avoidance (CSMA-CA) with binary exponential back off algorithm (BEB) to avoid collision between the sensor nodes. However, BEB does not consider the traffic characteristics which degrade the smart grid network performance. In this paper, a traffic aware spiral back off mechanism is proposed to improve the network performance. Simulation results show that proposed spiral back off algorithm reduces the end-to-end delay and increase packet delivery ratio (PDR) for real time data. © 2014 IEEE.

Author keywords

IEEE 802.15.4 MAC protocol Smart Grid Spiral Backoff Algorithm Wireless Sensor Network

Indexed keywords

Engineering controlled terms: Carrier communication Carrier sense multiple access Low power electronics Medium access control Network performance Sensor nodes Smart power grids Standards Telecommunication networks

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