

ABSTRACT

Traditional routing and transmission use a single path through the network even though the infrastructure of today communication multiple paths are usually available; e.g., in Wireless Sensor Network. Wireless sensor networks (WSNs) consist of distributed and networked sensors which jointly monitor the physical or environmental conditions such as temperature, sound, vibration, pressure, and motion at different locations. There are two distinctive characteristics in WSNs, using complex and interference wireless channel and using limited battery power source. Reliable transmission in WSNs can be considered at two levels which are lower energy consumption and higher successful delivery ratio. Multipath routing in WSN is used to improve the reliability of WSN with using a lot of tracks or paths transmission from the source to the sink, but with high redundancy results in more transmissions, the energy consumption accordingly becomes greater. To address this problem, it is useful to incorporate network coding into TCP or routing, as network coding can offer significant benefits in terms of power efficient, reliability, and robustness. In this research, we want to modify existing network coding multipath routing with propose a novel node selection respect to own power residual node in network coding routing mechanism to improve reliability of a WSN. The research uses software network simulation method by using OMNET++ platform and MiXiM Framework library. Experimental simulation show that proposed mechanism to select nodes that executing network coding succeed to improve reliability of the previous research in terms of higher Successful Delivery Ratio and lower Energy Recovery of a WSN.

Keywords: Transmission, Multipath Routing, network coding, Wireless sensor network (WSN), IEEE 802.15.4.