

Performance Enhancement in IEEE 802.15.4 Wireless Sensor Networks by Link-Quality Based Node Grouping

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Abstract—IEEE 802.15.4 is the most successful low-rate wireless personal area network (LR-WPAN) standard enabling the deployment of wireless sensor networks (WSNs). However, in WSNs, each node has a limited communication range and battery lifetime. Moreover, sensor nodes may be scattered over a wide area. Hence, a hidden node collision is a crucial factor affecting the overall performance of WSNs. In this letter, we propose an advanced mechanism of mitigating the hidden node collision by grouping sensor nodes according to the link-quality indicator (LQI) information.

Keyword—Wireless sensor networks, hidden node problem, IEEE 802.15.4, node grouping, link-quality indicator

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