

A RSSI-Based Mesh Routing Protocol based IEEE 802.11p/WAVE for Smart Pole Networks

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Abstract— This paper proposes a RSSI-based routing protocol for smart pole mesh networks equipped with multiple IEEE 802.11p/WAVE radios. In the IEEE 802.11p based multi-radio multi-channel environments, the performance of traditional mesh routing protocols is severely degraded because of metric measurement overhead. The periodic probe messages for measuring the quality of each channel incurs a large overhead due to the channel switching delay. To solve such an overhead problem, we introduce a routing metric that estimates expected transmission time and proposes a light-weight channel allocation algorithm based on RSSI value only. We evaluate the performance of the proposed solution through simulation experiments with NS-3. Simulation results show that it can improve the network performance in terms of latency and throughput, compared to the legacy WCETT routing scheme.

Keywords— wireless mesh network, routing protocol, smart pole, RSSI, channel allocation, IEEE 802.11p, WAVE



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