

基于能量均衡的 ZigBee 路由优化算法

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摘要: 针对 ZigBee 现有路由协议存在节点能耗不均、易造成网络分割死亡的问题, 提出了一种能量均衡的 ZigBee 路由算法, 该算法对 ZBR 路由算法进行改进.改进后的算法考虑了对低能量节点的保护, 控制了 RREQ 分组传递方向, 减少数据泛洪, 同时在路由发现时建立了多条路径, 若主路径发送失败, 即可直接切换到备用路径, 降低延时同时减少能耗. 仿真表明, 改进后的路由算法能减少网络总体能耗, 平衡节点能量, 最大化网络寿命.

关键词: ZigBee; 能量均衡; 路由算法; 优化

An Improved Zig Bee Routing Algorithm Based on Energy Balance

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Abstract: In order to solve the problem that the existing routing protocols in ZigBee have unequal node energy consumption and easy to cause the network to divide and die, an energy balanced ZigBee routing algorithm is proposed. The algorithm improves the ZBR routing algorithm. The improved algorithm takes into account the protection of the low energy of the node, control the direction of RREQ packet transmission, reduce data flooding, and at the same time build more than one path in the route discovery phase. If the primary path fails, it can switch directly to the backup path to reduce delay and reduce energy consumption. The simulation results show that the improved routing algorithm can effectively reduce the network energy consumption, balance the node energy and prolong the network lifetime.

Key words: ZigBee; energy balance; routing algorithm; optimization

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