Abstract

In this paper, in the LEACH (Low Energy Adaptive Clustering Hierarchy) protocol two improvements have been made, firstly in the cluster head selection:— By using the residual energy of the node and distance between the node and the base station, the random number generated by the node is adjusted. The random number of the nodes with more residual energy and the distance from the base station are adjusted to a smaller value, which makes it more likely to be the cluster head. However, this method does not consider the effect of the number of cluster heads on the algorithm. Secondly, the optimal number of cluster heads is proposed:— Which can ensure the balance of network load by controlling the number of cluster heads in the optimal range. Finally simulation results show that the improved algorithm can effectively reduce the energy consumption and prolong the lifetime of nodes and the whole network.


Index Terms

Computer Science       Wireless
Keywords

Wireless sensor network, routing protocol, LEACH, cluster head, energy consumption, network lifetime.