Abstract

The traditional network is layered designed. Most network architectures of the radio network are also layered. There are four layers for the radio networks, the physical layer, the link layer, the network layer and the application layer. In the layered design, each layer just is responsible for its own task. This can make the design more easily, and the network architecture adapted more application. But this also may make the design not efficient.
Because each layer does its only job and does not know the other layer’s status. For example, in many applications of wireless sensor networks, the MAC layer will shutdown the transceiver when the MAC layer thinks no data packet to send. But if when the node shutdown the transceiver, the routing layer thinks it is time to send a hello packet or something else, the node must reopen the transceiver. This does not save the energy. It is a waste of energy, the frequently open and shutdown operation will consume a lot of energy. But if the design is cross-layer, this situation could be avoided. When the MAC layer want shutdown the transceiver, it will check that whether it is time for the routing layer to send the hello message. Then the conflict is avoided. The radio network is application-dependent. So according to the actual application, the cross-layer design will make an efficient routing protocol for the wireless sensor networks.

Reference


Index Terms

Computer Science Ubiquitous Computing
Key words

Data Streaming in Multihop Wireless Sensor Network

Network

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