A Review on Hierarchical Routing Protocols for Wireless Sensor Networks.

ABSTRACT

The routing protocol for Wireless Sensor Networks (WSNs) is defined as the manner of data dissemination from the network field (source) to the base station (destination). Based on the network topology, there are two types of routing protocols in WSNs, they are namely flat routing protocols and hierarchical routing protocols. Hierarchical routing protocols (HRPs) are more energy efficient and scalable compared to flat routing protocols. This paper discusses how topology management and network application influence the performance of cluster-based and chain-based hierarchical networks. It reviews the basic features of sensor connectivity issues such as power control in topology set-up, sleep/idle pairing and data transmission control that are used in five common HRPs, and it also examines their impact on the protocol performance. A good picture of their respective performances give an indication how network applications, i.e whether reactive or proactive, and topology management i.e. whether centralized or distributed would determine the network performance. Finally, from the ensuring discussion, it is shown that the chain-based HRPs guarantee a longer network lifetime compared to cluster-based HRPs by three to five times.

Keyword: Routing protocols; Hierarchical; Clustering; Sensor networks