Routing Protocols in Wireless Sensor Networks

Elementrix Classes

Routing protocols are responsible for forwarding data packets from the source node to the destination node, through intermediate nodes if necessary. They define the rules and procedures that are used to determine the route that the data packets should follow through the network.

There are many different routing protocols available, and they can be classified into several categories, including:

❏ **Proactive routing protocols:** Proactive routing protocols maintain a routing table that contains the routes to all the nodes in the network. They periodically update the routing table to reflect the current network topology, and they can quickly route data packets to the destination without delay. However, they consume more energy and bandwidth, as they constantly exchange routing information.

❏ **Reactive routing protocols:** Reactive routing protocols do not maintain a routing table, and they only establish routes when they are needed. They are more energy and bandwidth efficient, as they only exchange routing information when necessary. However, they may have longer delays when routing data packets, as they need to discover the route before they can transmit the data.

❏ **Hybrid routing protocols:** Hybrid routing protocols combine the characteristics of proactive and reactive routing protocols, and they attempt to balance the trade-offs between energy efficiency and delay.

Overall, the choice of routing protocol depends on the specific requirements of the application, including the network size, the traffic pattern, the energy constraints, and the delay tolerance.

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