Routing Techniques in Wireless Sensor Networks: A Survey

Jamal N. Al-Karaki, The Hashemite University
Ahmed E. Kamal, Iowa State University

Presented by: Maria Calle

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Assumptions

- WSNs are application-specific.
- Routing only towards one Base station
- No global ID addresses (large overhead). Also, sometimes sending the data is more important than the ID.
- Careful resource management because of high constraints.
- Mostly stationary nodes, but some of them may move.
- Position awareness is important “since data collection is normally based on the location”. GPS-free solutions are preferred.
- High probability of redundant data.

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Routing Challenges and design issues

- Node deployment: random or deterministic. Short ranges mean multiple hops.
- Power failure causes significant topological changes
- Node/link heterogeneity: different communication, computation power and energy
- Fault tolerance: Reroute packets through paths with more available energy.
- Scalability
- Moving sensors or moving target
- Transmission media: fading, high error rate
- Connectivity: expected to be high, due to high density
- Limited Coverage of the desired phenomenon
- Data aggregation: combination of data from different sources according to a certain function (average, etc). Also called Data Fusion, if the node produces a more accurate output signal by combining others.

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