Data Dissemination Protocol in Sensor Networks to Tolerate Node and Link Failures

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Motivation

- Efficient transfer of data in sensor nodes is a challenge
  - Low Power
  - Low Processing
- Sensor Protocol Information Negotiation (SPIN) by Hari et.al.
  - Send ADV for message and get REQ back.

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Shortest-Path Minded Spin (SPMS)

- Use multiple transmission power levels.
- Do multi-hop Transmission.
- Define Zone for each node : Region a node can reach transmitting at its highest power level.

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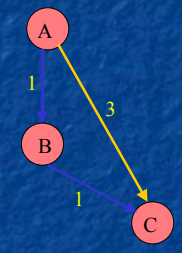
SPMS Transmission of Data

- A sends an ADV out.
- B can REQ the data.
- C will not REQ immediately since A-C is not shortest path.
- C gets a ADV from B within the timeout, then it will request the data from B.
- Else it will request the data from A routed through B.



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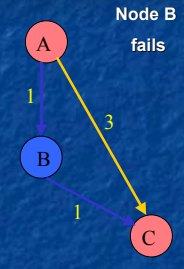
Failure of Nodes

- A sent out ADV
  - C will request through the costly route.
- C sent out a REQ
  - Time-out will cause it to send another REQ through the alternate route.



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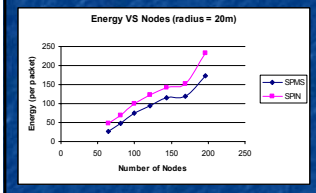
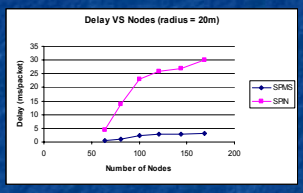
Simulation Results





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