ADV-MAC: Advertisement-based MAC Protocol for Wireless Sensor Networks

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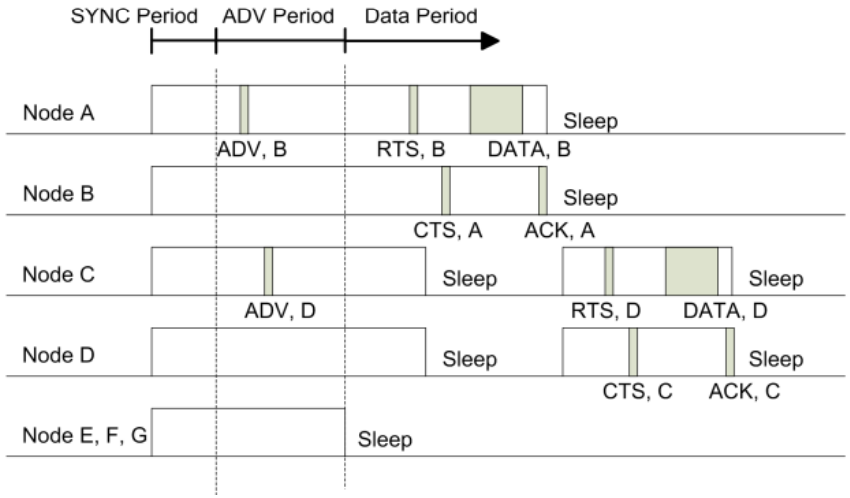
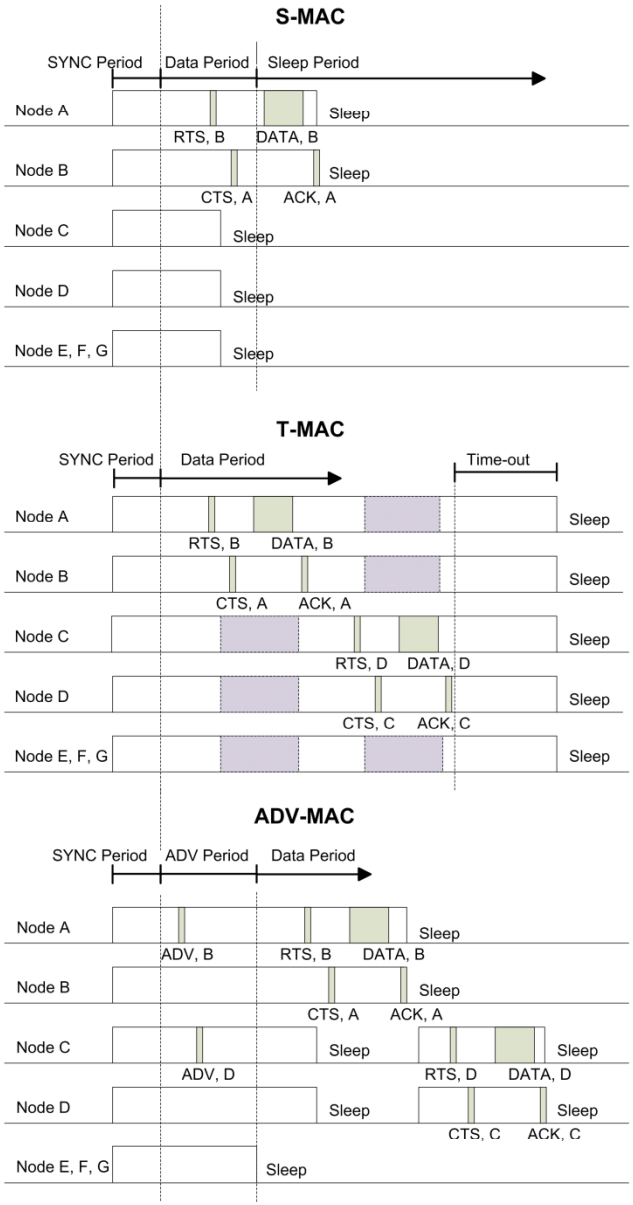


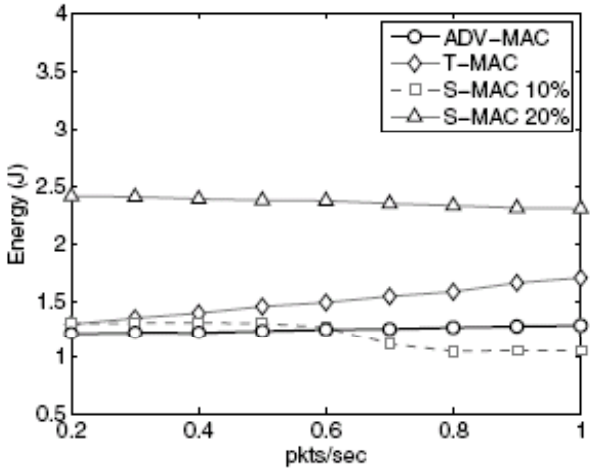
- ADV-MAC uses an **ADV period**
  - Before the data period
  - Inform receivers that packets are waiting for them
- After the ADV period
  - Nodes that do not have packets for them go to sleep
  - Only nodes with packets waiting stay awake → saves valuable energy

ADV-MAC: Comparison with Other Approaches

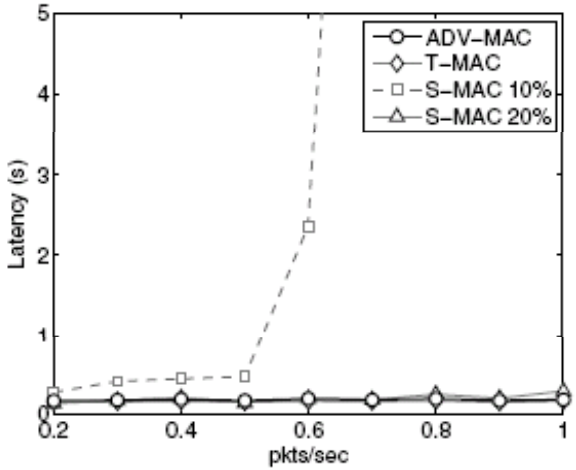


- S-MAC
  - Only one node can access medium each frame
  - Low throughput and high latency
  - Cannot adapt to variable load
- T-MAC
  - Nodes adapt well to variable load
  - Energy is wasted by nodes that are not a part of data exchange
- ADV-MAC
  - Nodes adapt well to variable traffic
  - Low energy consumption with high throughput and low latency

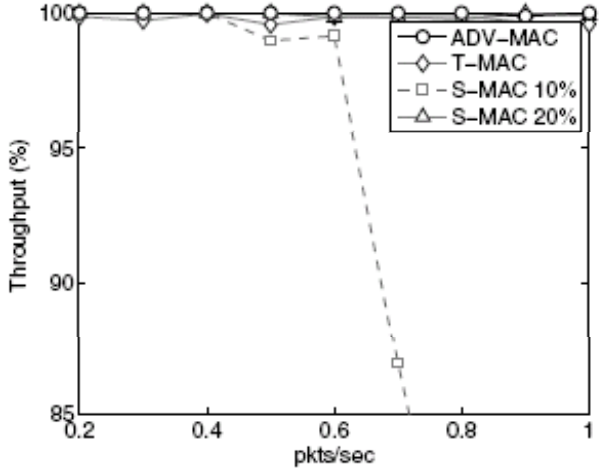
Simulation Results



(a) Energy Consumption vs. Data Rate.



(b) Latency vs. Data Rate.



(c) Throughput vs. Data Rate.

- ADV-MAC has the least energy consumption compared to T-MAC and S-MAC
- S-MAC with 10% duty cycle has lower energy consumption at higher data rates, but it gives very poor throughput and latency

ADV-MAC adapts well to the different loads.