



# B-MAC PROTOCOL and B-MAC vs S-MAC

Submitted to:

DR. MEENAKSHI TRIPATHI

Submitted by:

SUMIT YOGI (2015UCP1475)

ARPIT KAJAL (2015UCP1477)

# What is B-MAC?

It is an acronym for Berkeley MAC. It is a configurable CSMA MAC protocol for WSNs. Brought in to meet the demands of versatility and power

- Low power operation
- Effective collision avoidance
- Simple implementation / Small code
- Scalable to large number of nodes



# What causes energy waste?

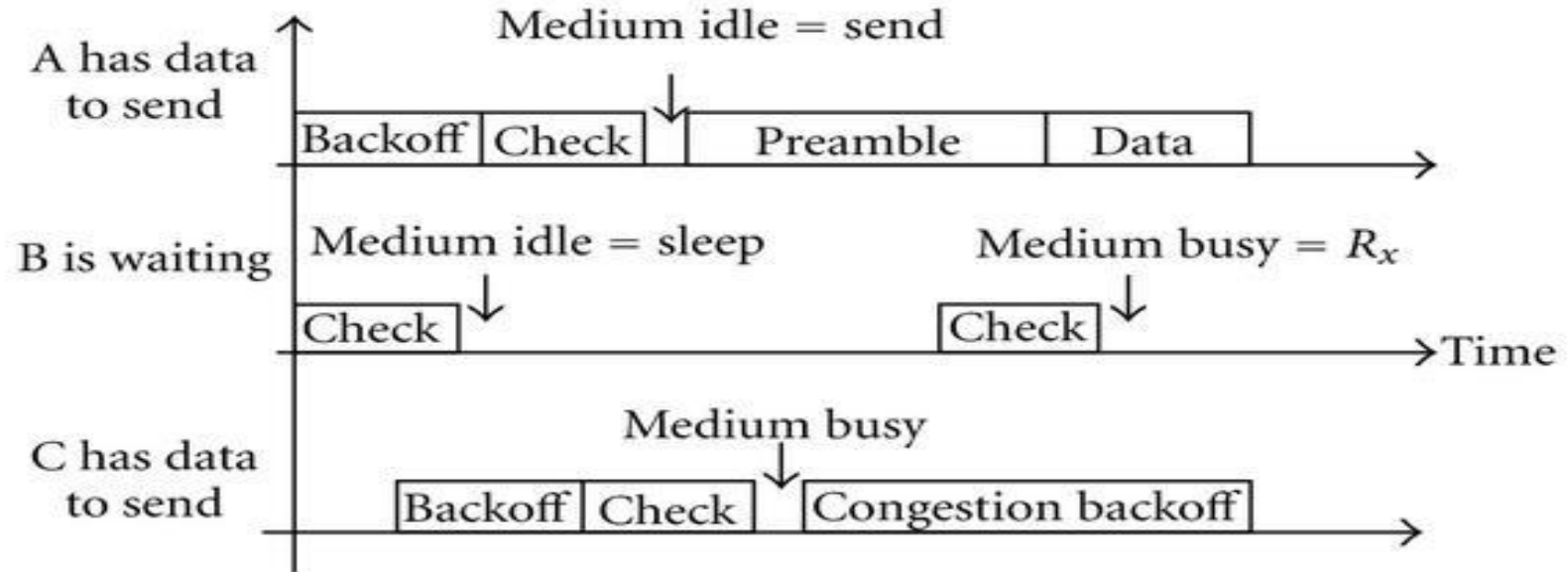
- Collisions/ Interference
- Control packet (RTS/CTS) Overhead
- Overhearing unnecessary traffic
- Long idle time



# B-MAC Implementation

- This technique consists of sampling the medium at fixed time intervals.
- Every node samples the medium at fixed intervals to check whether any node is willing to communicate
- If any node has a packet to send, node (sender) sense the medium if it is free, takes a small back-off and then sends a long wake up preamble followed by data packet.
- When receiver wakes up, it senses the medium and if it detects any noise (preamble), it turns on its radio and waits for the preamble to end
- On completion of preamble, if data packet is destined to the node itself, it receives full data packet otherwise ignores the packet and goes to sleep.

# B-MAC communication example. All nodes are within range of each other





# What B-Mac cannot do

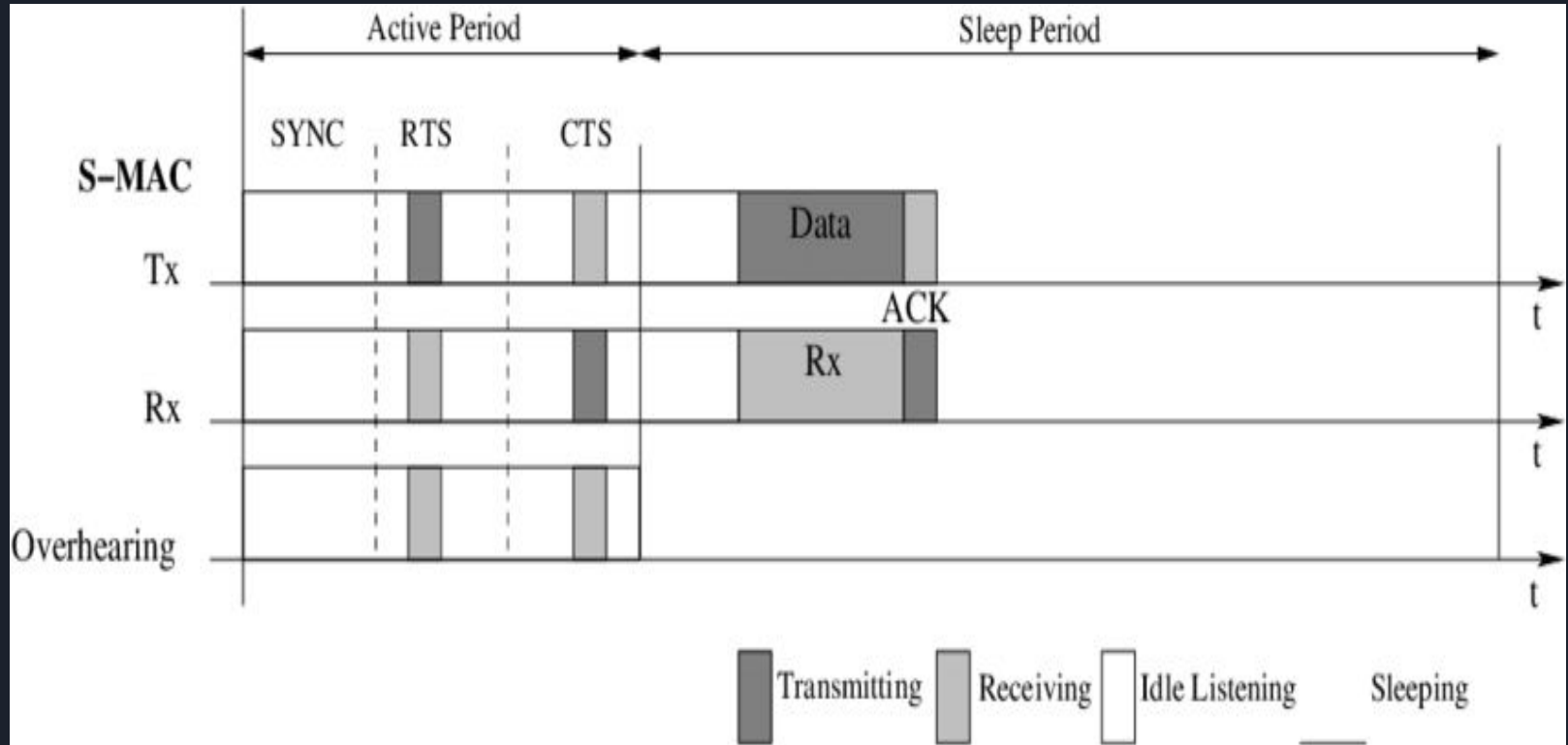
- Message fragmentation
- Only a link protocol with network services like organization, synchronization, and routing built above its implementation
- Cannot solve problem of overhearing
- No adaptive listening period



## S-MAC

- Periodic listen and sleep .
- Turn off radio when sleeping .
- Trades Energy efficiency for lower throughput and higher latency.
- Collision and overhearing avoidance.
- Uses 4 way handshake (RTS-CTS-DATA-ACK).

# S-MAC PROTOCOL :







## Comparison of S-MAC and B-MAC:

- S-MAC solves overhearing of nodes using NAV (Network allocation vector) but B-MAC is not able to solve it .
- Synchronization mechanism is needed in case of S-MAC but in B-MAC synchronization required is less.
- Overhead (RTS + CTS + ACK + DATA) in S-MAC as compare to B-MAC (PREAMBLE+DATA) thus B-MAC has better scalability and simplicity.
- Overall performance B-MAC is better



	<b>S-MAC</b>	<b>B-MAC</b>
<b>Collision avoidance</b>	CSMA-CA	CSMA
<b>ACK</b>	YES	OPTIONAL
<b>Message passing</b>	YES	NO
<b>Overhearing Avoidance</b>	YES	NO
<b>Listen period</b>	PRE-DEFINED+ADAPTIVE LISTEN	PRE-DEFINED
<b>Listen Interval</b>	LONG	VERY SHORT
<b>Schedule Synchronization</b>	REQUIRED	NOT REQUIRED
<b>Packet transmission</b>	Short Preamble	Long Preamble



**THANK YOU**