Sleep mode control mechanism for Constrained networks

draft-hong-lwig-sleepmode-control-00

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Goals of this draft

- Goal of lwig WG
  - Build minimal yet interoperable IP-capable devices for the most constrained environments
  - Document energy efficient implementation guidance
- Design **interoperable** sleepy node
  - Sleepy nodes in network layer
  - Power saving has become issues in network layer

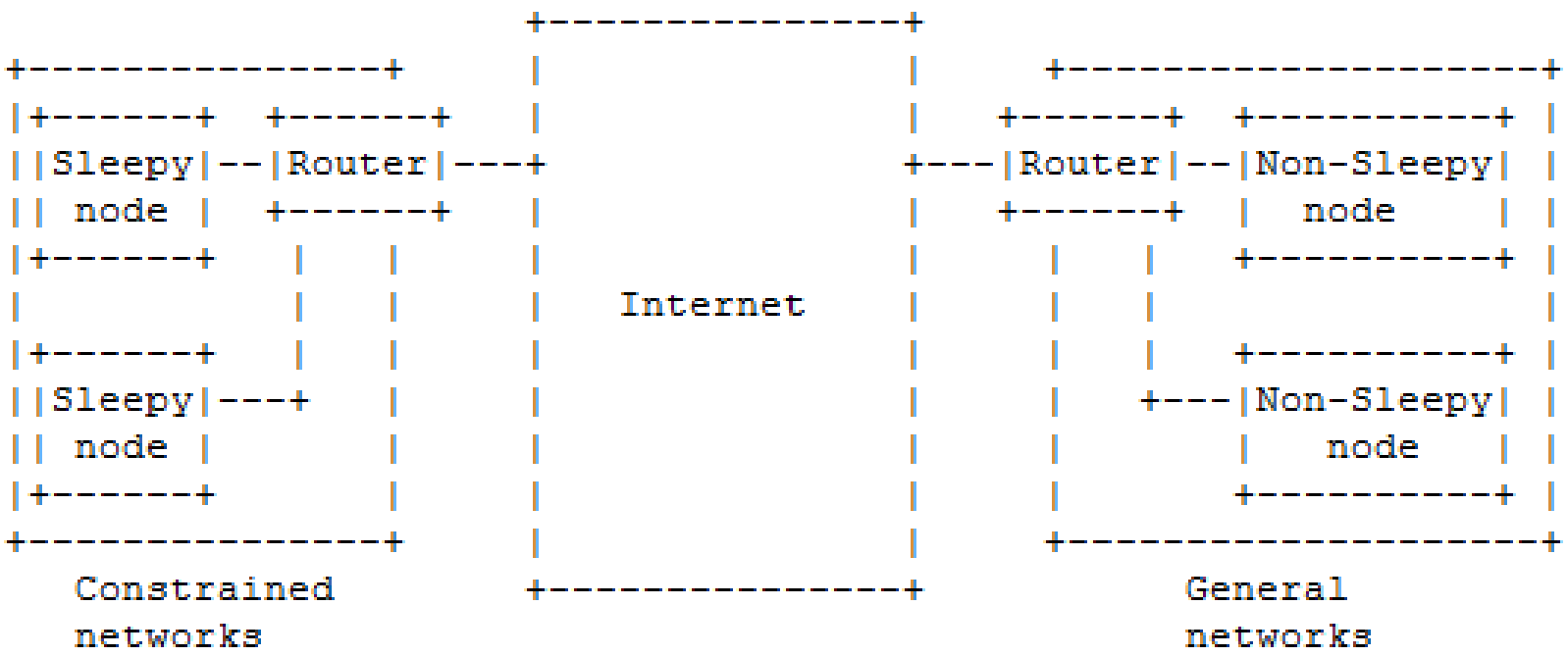
Related works

- Power saving in PHY/MAC layer
  - Power Save Mode (PSM) in IEEE 802.11 WLAN
    - Synchronous sleep scheduling policy
    - Alternate between an active mode and a sleep mode
- 6lowpan-nd
  - Has limited the usage of multicast signaling
- CoAP
  - Functions such as proxy and cache
- 6man
  - IPv6 ND for sleepy nodes

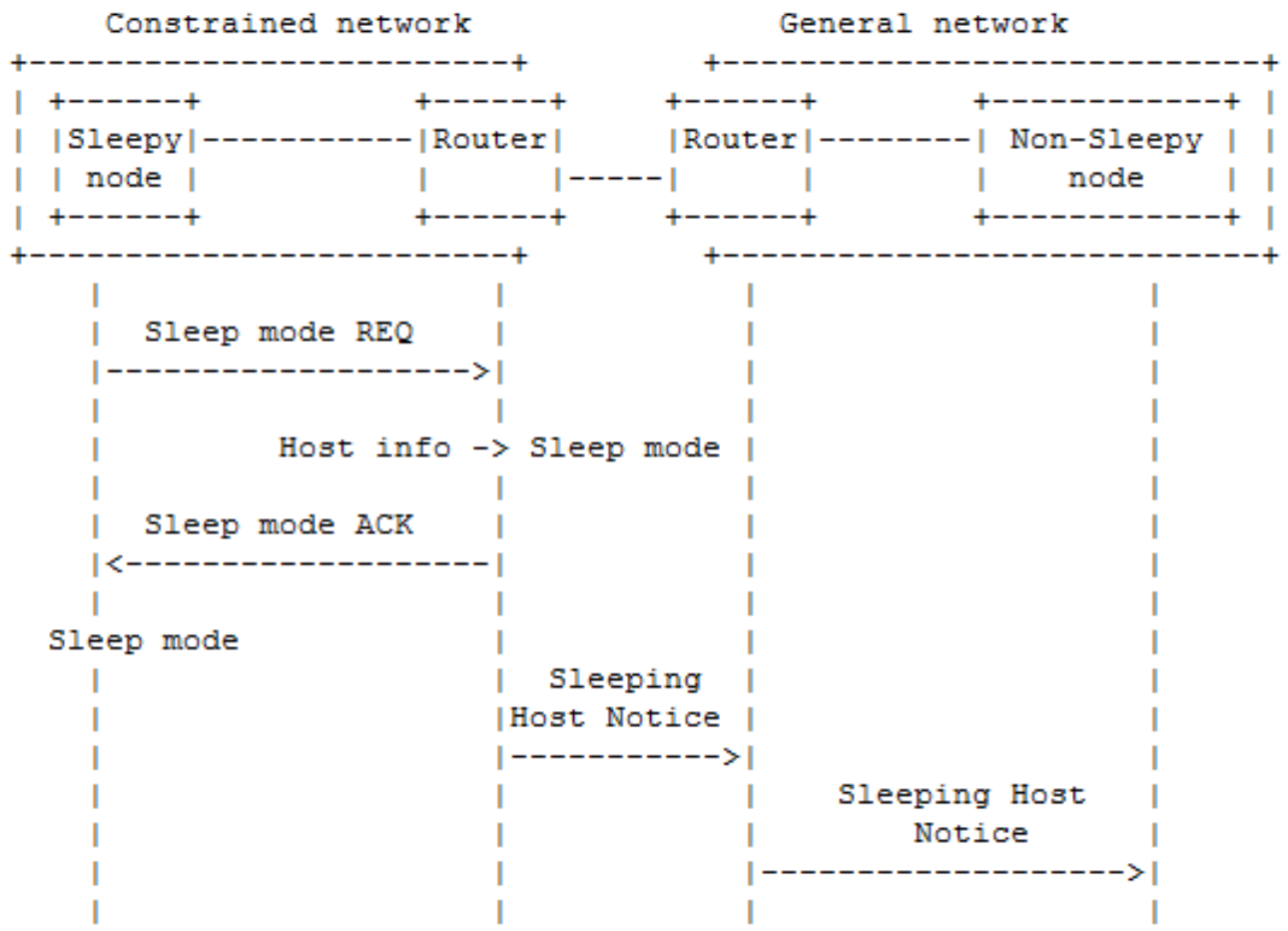
Basic idea of sleep mode control

- Router manages sleepy nodes
  - A. Exchange sleep mode REQ/ACK messages
  - B. Advertise sleep mode message
  - Inform the status of sleep nodes to the corresponding nodes
- Router advertises synchronization information
  - The synchronization information includes the start and end time of sleep mode
  - Inform the status of sleep modes to the corresponding nodes

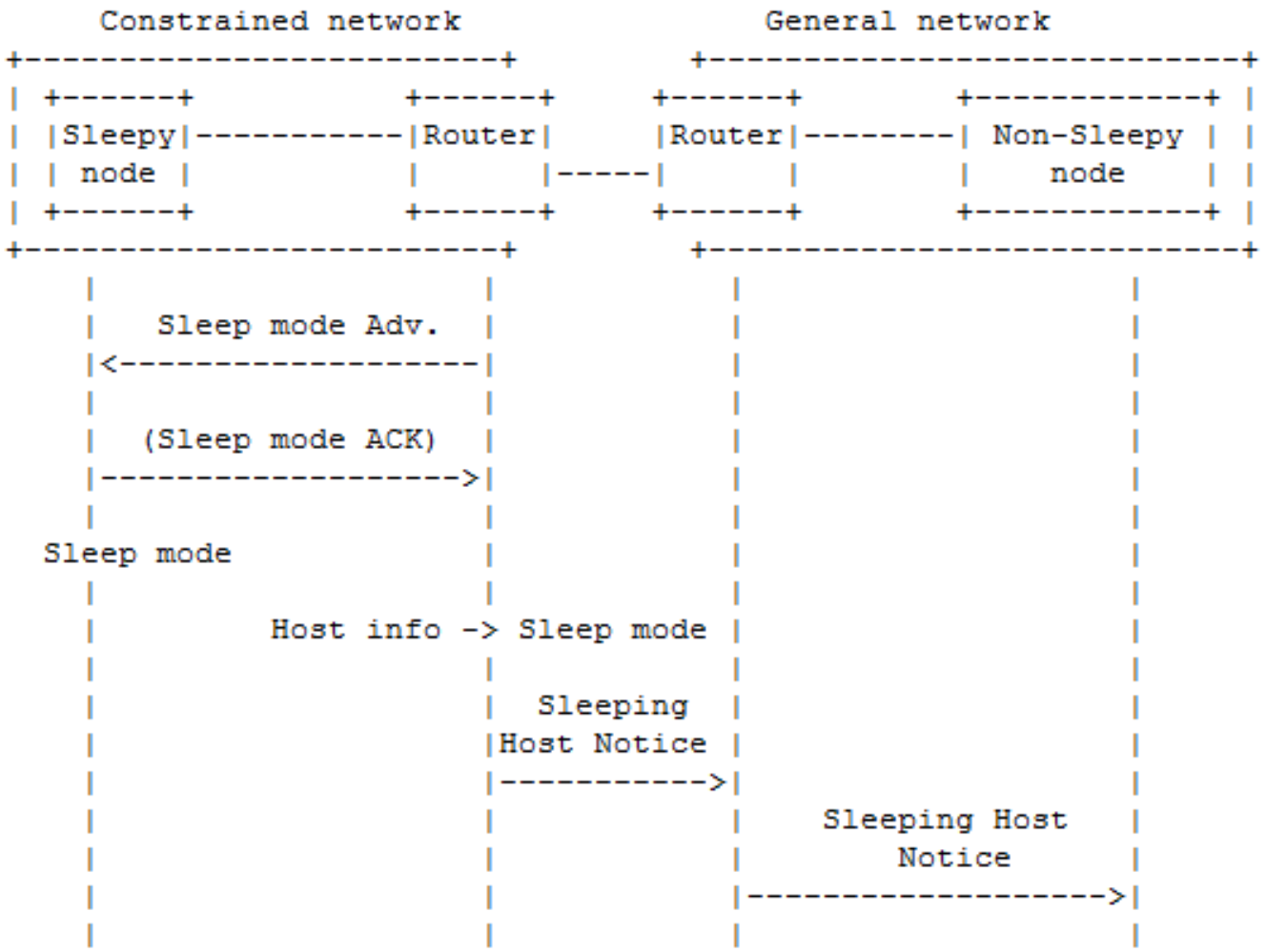
Scenario


Sleepy node
Router
Sleepy node
Internet
Router
Non-Sleepy node
Non-Sleepy node
Constrained networks
General networks

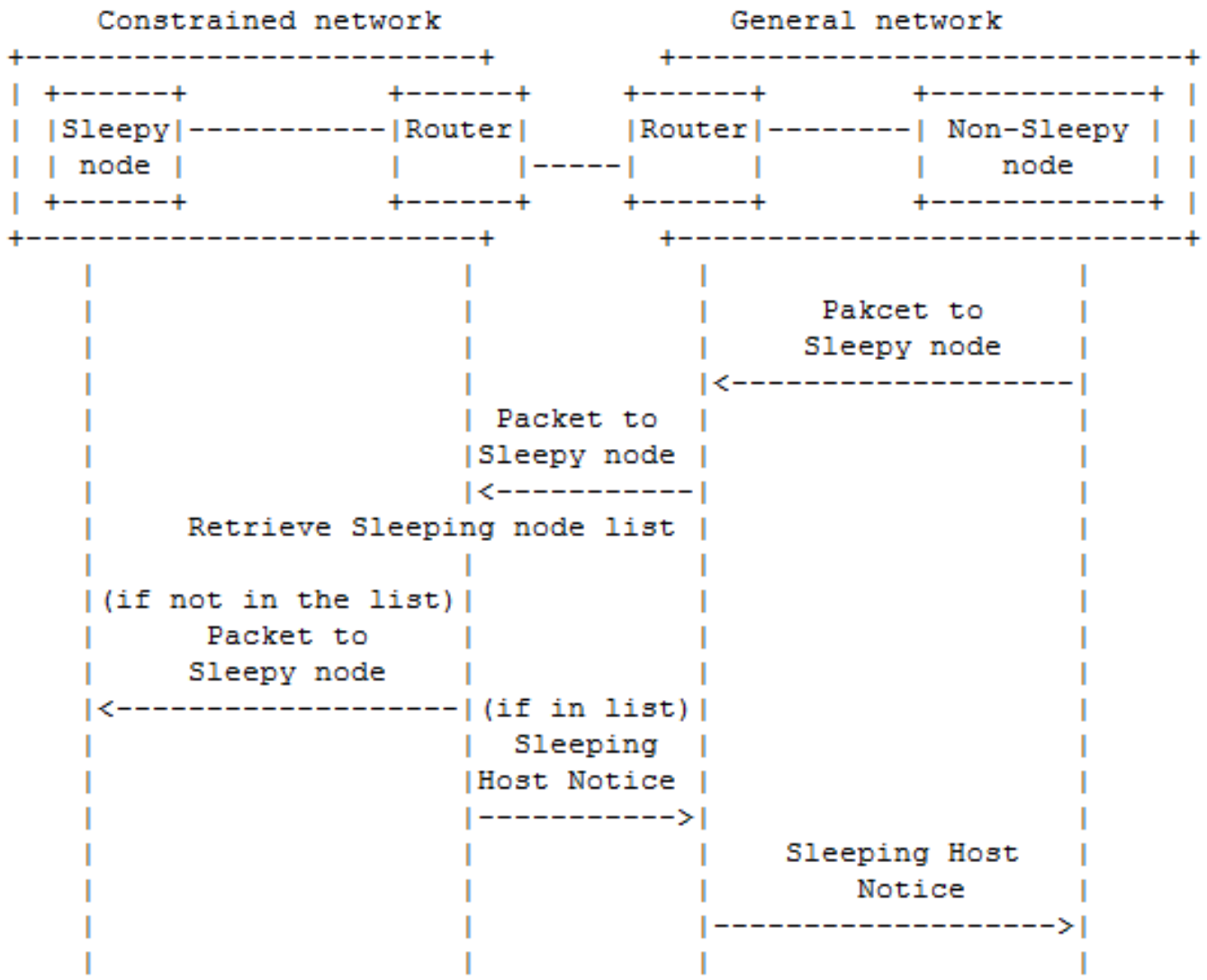
Sleep mode request/response



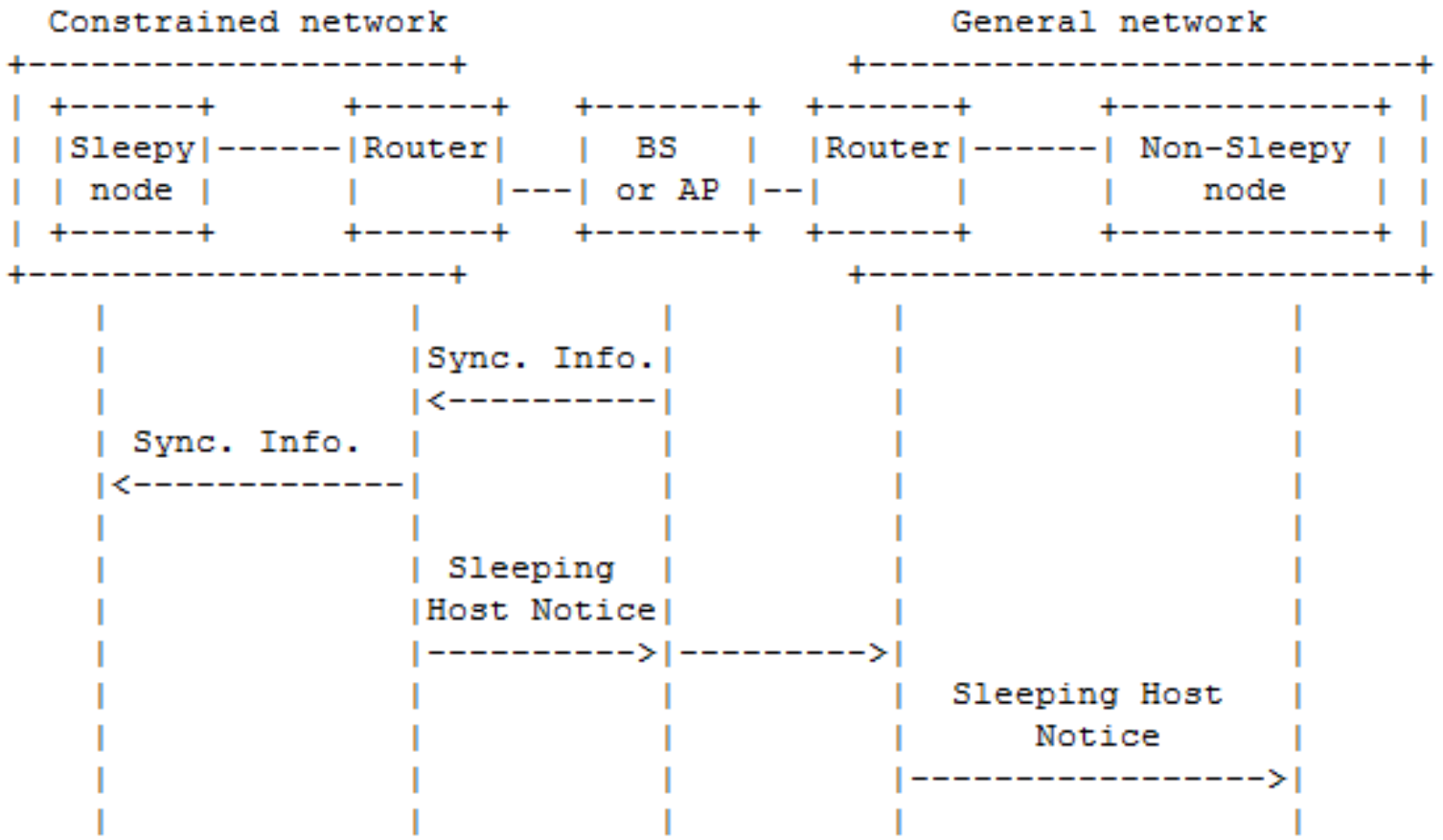
Sleep mode advertisement [1/2]



Sleep mode advertisement [2/2]



Sleep mode control by using synchronization information



Next Step?

- A sleepy node is a typical case of constrained node
- Implementing the sleep mode control
  - HW : Intel Galileo Board + low power wireless IF
  - SW : Modifying network layer code
- Welcome feedback!