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DIS modifications-00

draft-goyal-roll-dis-modifications-00

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Document status

• Merger of
  – draft-dejean-roll-selective-DIS
  – draft-goyal-roll-defunct-dags
• Submitted on Sept 5\textsuperscript{th} 2011
  – no comments received so far
What is it about?

• Legalize DMC in DIS
  – only Constraints are legal
• Decouple Trickle reset and transmission mode
  – a flag in DIS to say “no inconsistency”
• Decouple request and response modes
  – a flag in DIS to say “respond in multicast”
• Opt. spread responses
Use #1: new node insertion

• With current RPL spec
  – Node either waits for incoming DIOs
    • Long time, any router, suppression
  – Or multicasts DIS to prompt for DIOs
    • All routers nearby reset their Trickle timer
    • Lots of DIOs will be sent until timers relax to long period
    • Each DIO triggers energy consumption in vicinity (multicast)
Use #1: new node insertion

• With this proposal
  – set N flag in DIS header to mean “no inconsistency”
    • do not reset your Trickle timer
    • reply to me with unicast DIO
  – use DMC option in DIS messages
    • targets "good" candidates
Use case #2: defunct DAGs

• With current RPL spec
  – Freeing up resources potentially delayed
    • missed DIO
    • unreachability not detect if no data transmission
Use case #2: defunct DAGs

• With this proposal
  – set N flag in DIS header to mean “no inconsistency”
    • do not reset your Trickle timer
  – set T flag in DIS header to mean “reply with multicast DIO”
    • other routers in the vicinity won’t have to repeat DIS
Conclusions

• Real industrial use case
• Implemented

• Please provide feedback
Thank you!
Backup
Collision mitigation

- **Optional**: spread out DIO responses
  
  ![Figure 2: The Response Spreading option](image)

  - Uniform random time within interval \([0 .. 2^{\text{SpreadingInterval}}]\)

- Not needed if decent MAC and application known