Reactive Discovery of Point-to-Point Routes in Low Power and Lossy Networks

draft-ietf-roll-p2p-rpl

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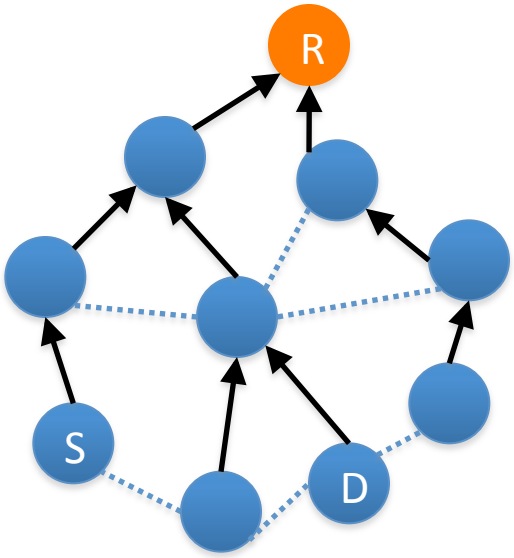
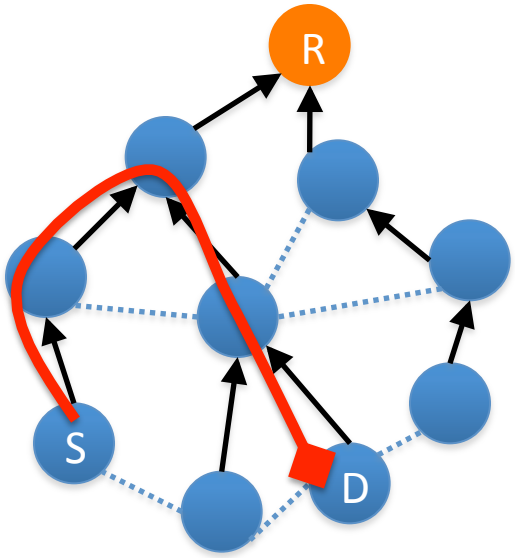
Goal

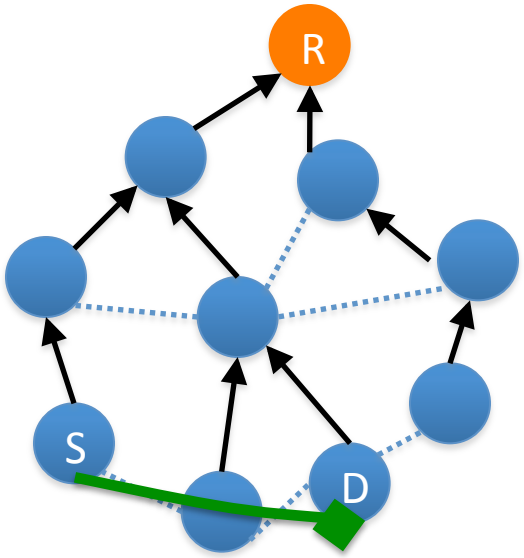
- Extension of the basic RPL spec
- Alternative, shorter sensor-to-sensor paths
- Reactive discovery request/reply mechanism



DAG



Path with basic RPL



Path with P2P extension

Functional Overview

- DIO + Route discover option
- Trickle + link local multicast
- Temporary DAG rooted at source

- Target sends DRO back to source
- Hop-by-hop state or source route path establishment

Drafts Status

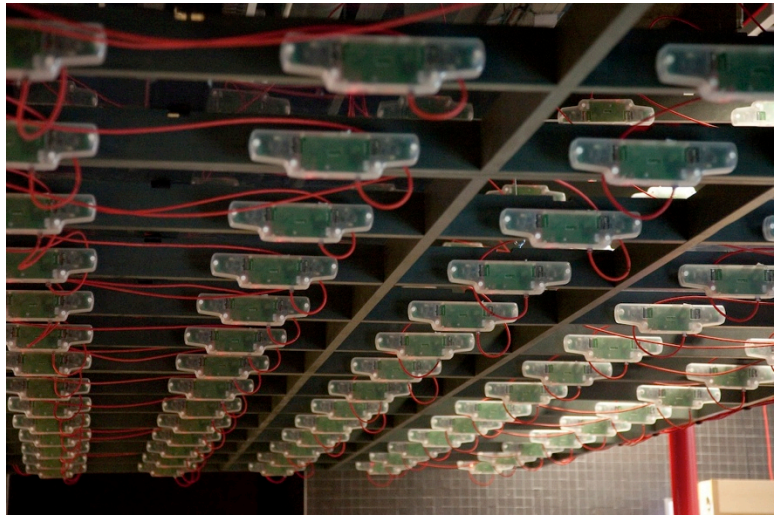
- draft-ietf-roll-p2p-rpl-05 published this week
  - Editorial changes since -04
  - Last call?

Implementations & Interop

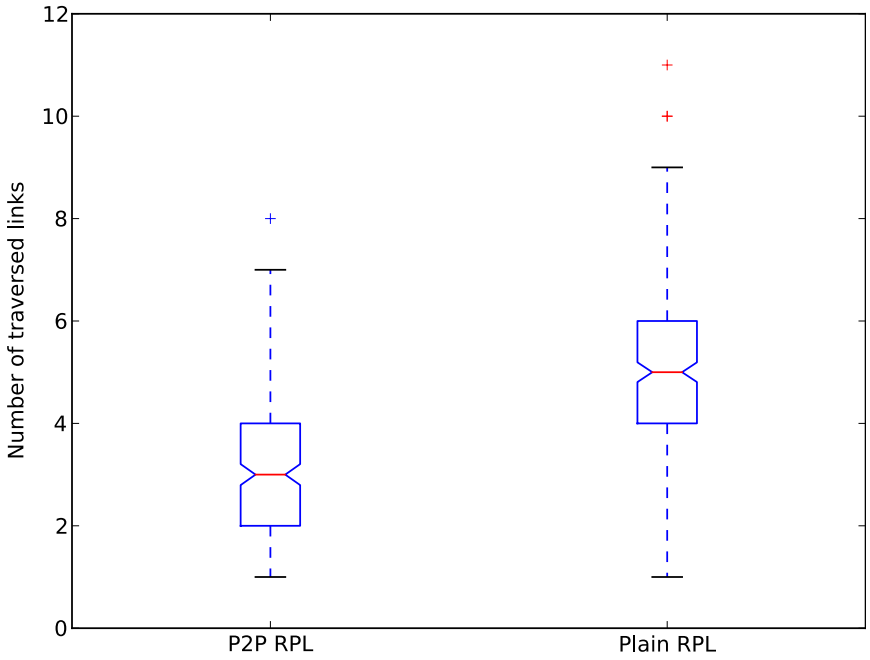
- INRIA implementation
  - MSP430, CC2420, 802.15.4
- Sigma Designs implementation
  - ZW0401, ZWAVE
- Other implementations (on ns2 from UWM, LIX)
- Interop happening this week between INRIA and Sigma Designs implementations

Deployment

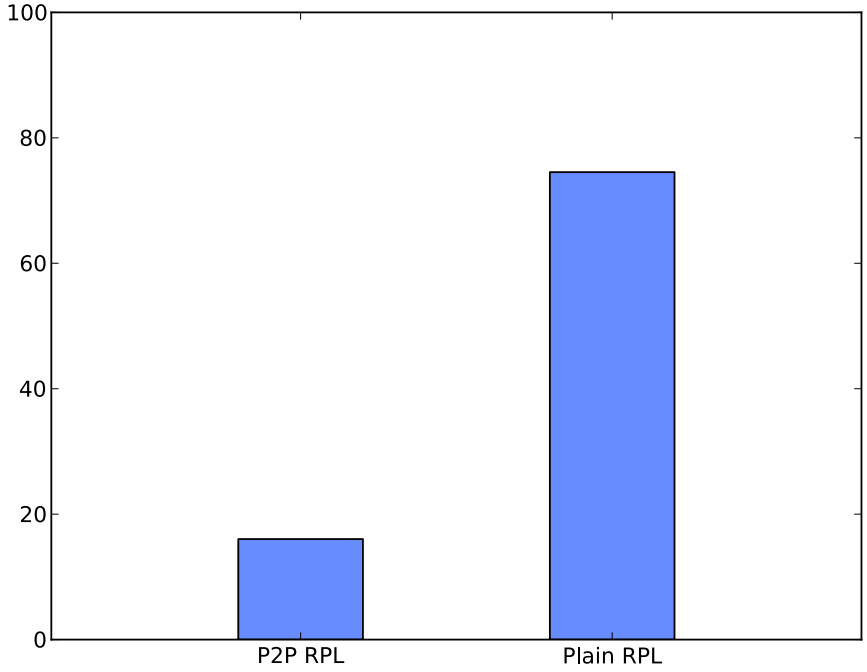
- Senslab Lille testbed
  - 256 nodes
  - 2.4 GHz IEEE 802.15.4



Experiments



Significant path length reduction



Significant traffic reduction near root

Measurement of P2P Route in LLNs

draft-ietf-roll-p2p-measurement

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Functional Overview

- Measure quality of existing path
- Decide to initiate discover of better path

- Origin sends measurement request along path
- Request accumulates info along path
- Target unicasts back accumulated info
- Not requirement (informative ref. in P2P)

Draft Status & Implementation

- draft-ietf-roll-p2p-measurement-02 published last month
- INRIA implementation
  - MSP430, CC2420, 802.15.4
- Deployment on Senslab Lille testbed
- Ready soon for last call?