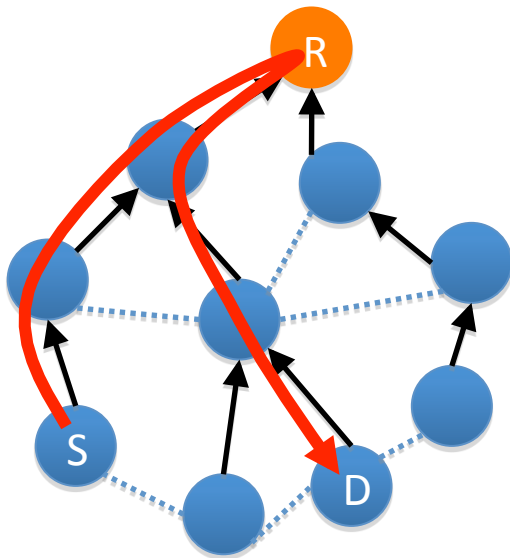# Reactive Discovery of Point-to-Point Routes in Low Power and Lossy Networks

draft-ietf-roll-p2p-rpl-02
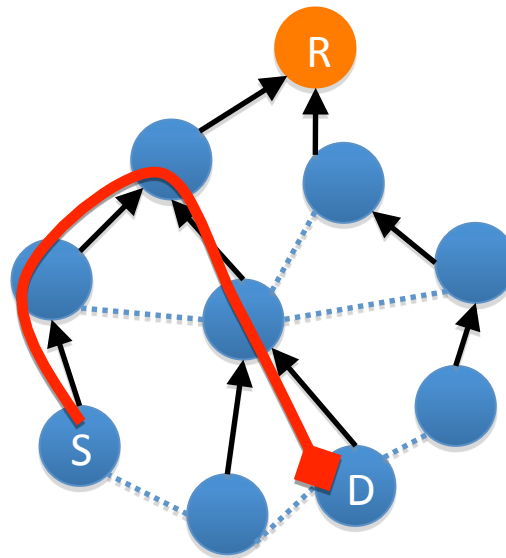
M Goyal, E Baccelli, A Brandt, R Cragie, J Martocci, C Perkins
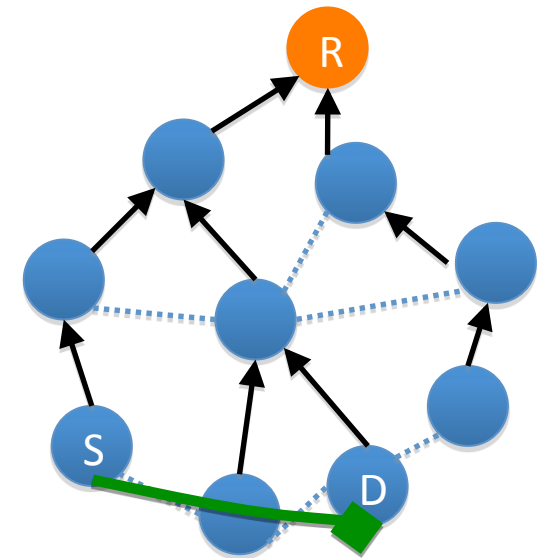
Goal

- Extension of the basic RPL spec

- Alternative, shorter point-to-point paths

- Reactive discovery request/reply mechanism

Non-Storing Mode Route   **Storing Mode Route**   **Route 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

Draft Status

- draft-brandt-roll-rpl-applicability-home-building-01
- draft-ietf-roll-p2p-rpl
- -02 published last month
  - Moved route constraints inside DRO
  - Minimum lifetime specified as exponent of 2
 - DIO propagation now same as basic RPL propagation conditions

P2P Extension Implementations

- INRIA implementation based on Contiki 2.5
  - MSP430, CC2420, 802.15.4

- Sigma Designs (in the works)
  - ZW0401, ZWAVE

- Sensinode, UWM (Contiki) implementations in the works soon?

- Ecole Polytechnique, implementations in ns-2

Targeted Topologies

- Sanity checks of the P2P spec so far on targeted topologies

- Sample JCI building deployments
  - Simulations using actual radio measurements

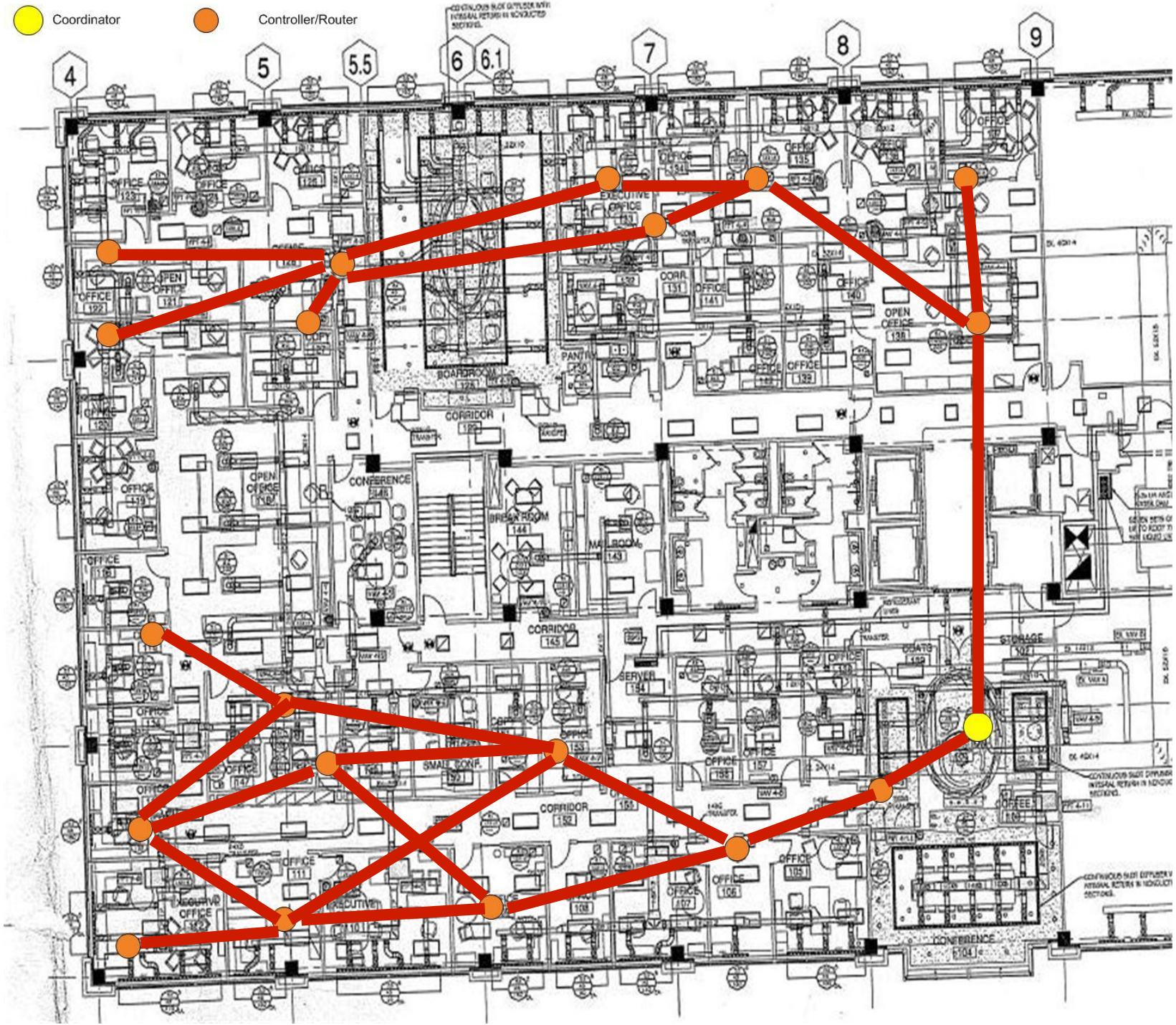# A Floor in a University Building

Legend:
- Coordinator (yellow)
- Controller/Router (orange)
- Repeater (blue)
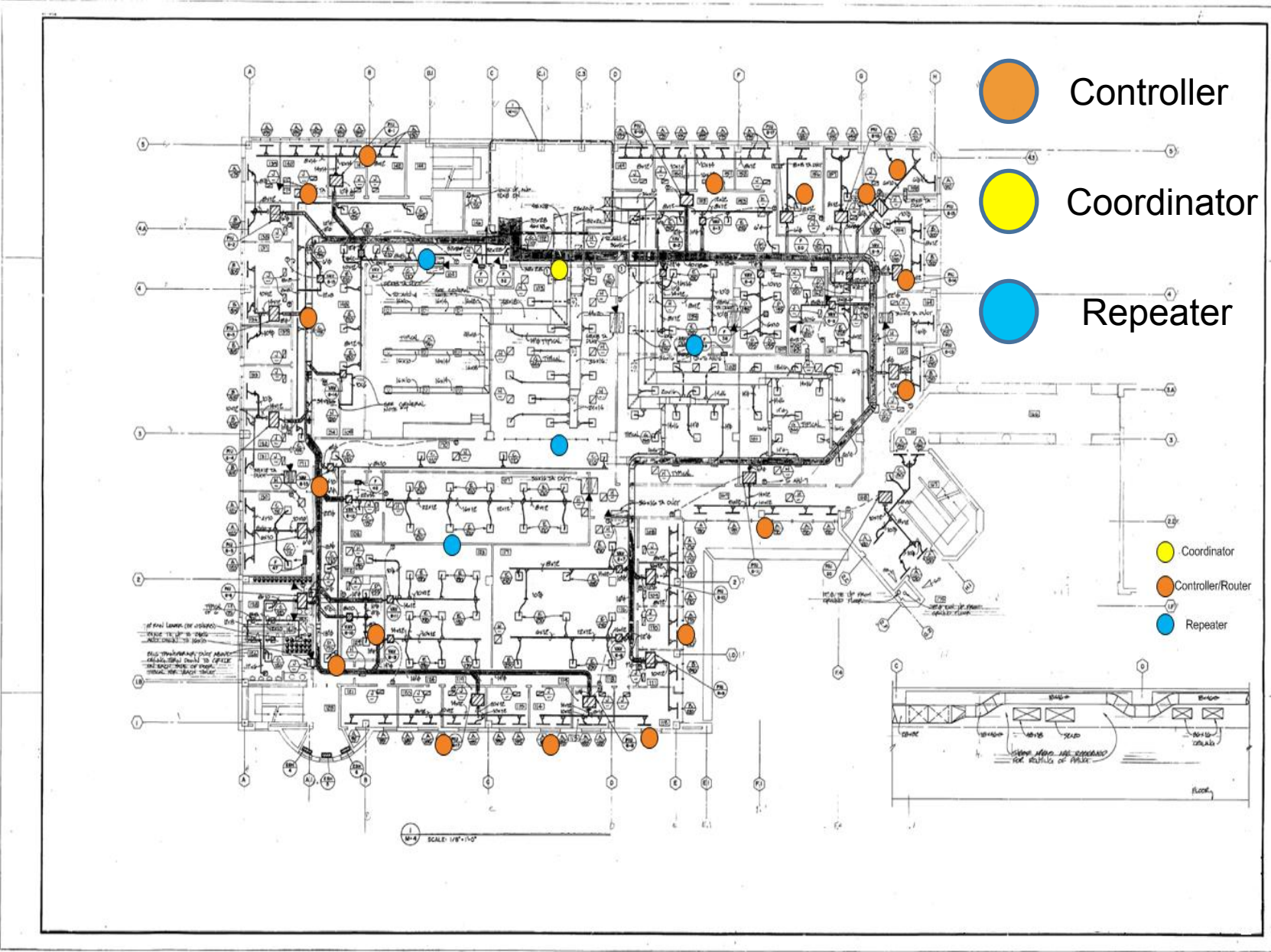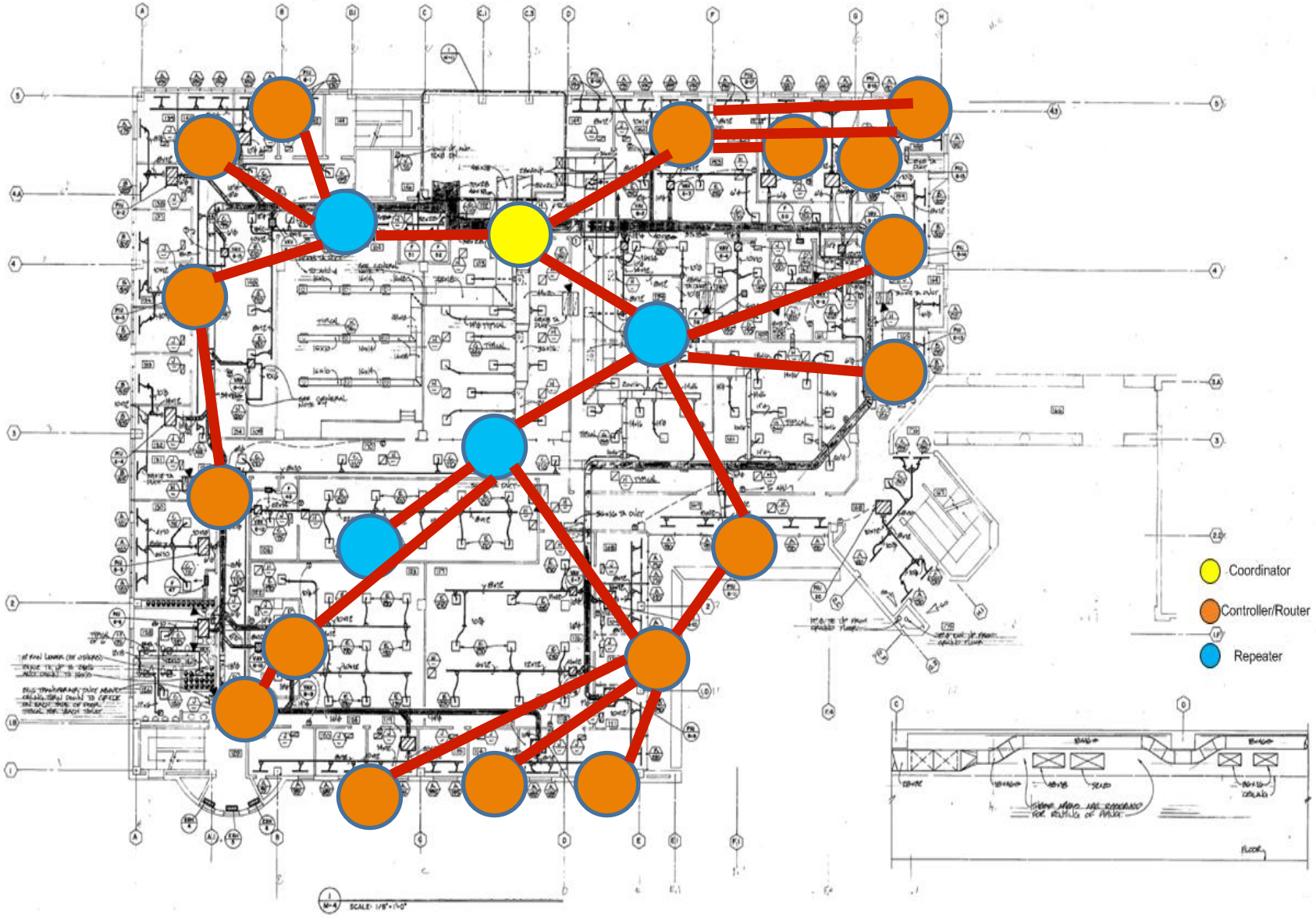
Half Floor in an Office Building
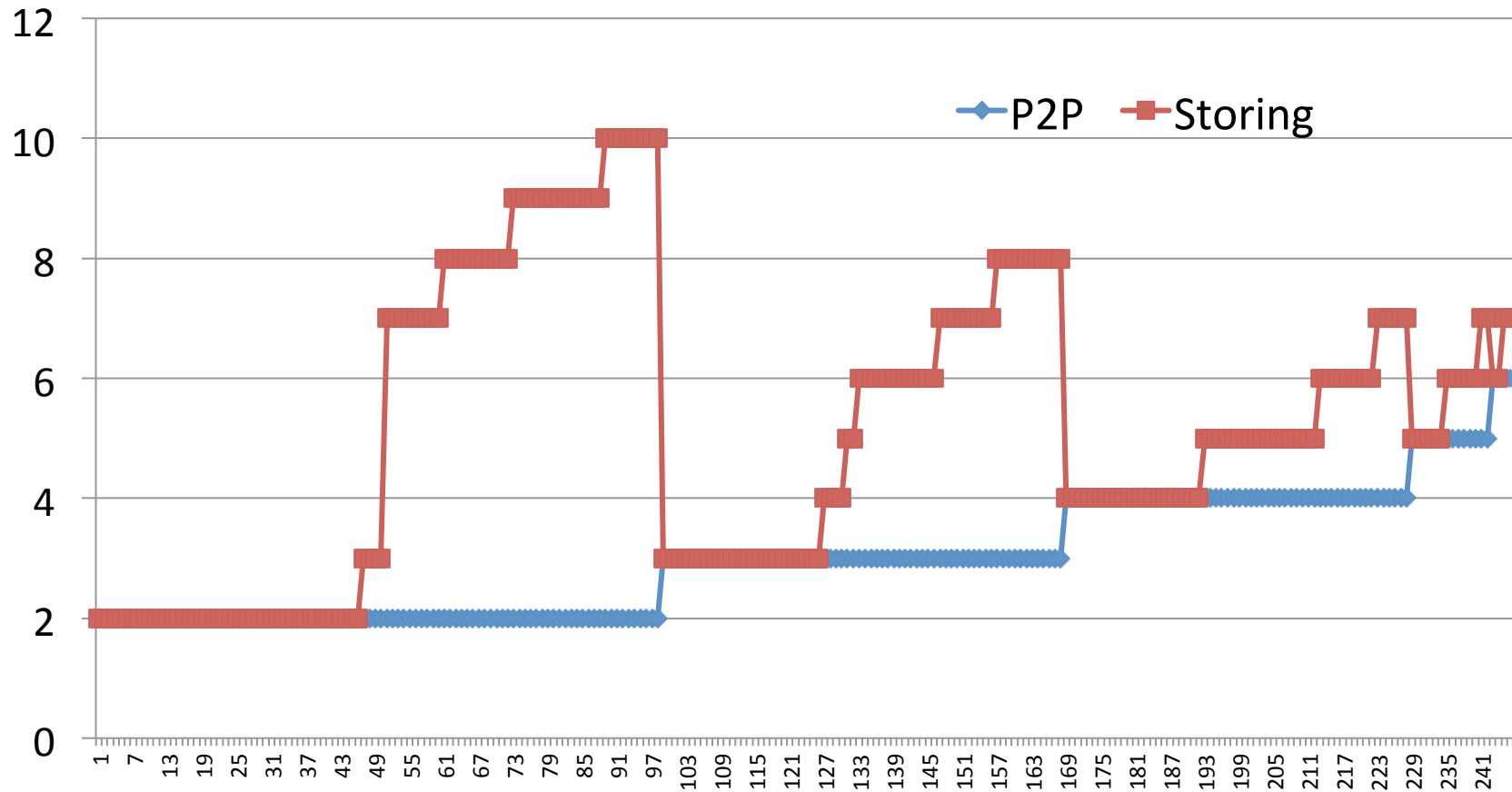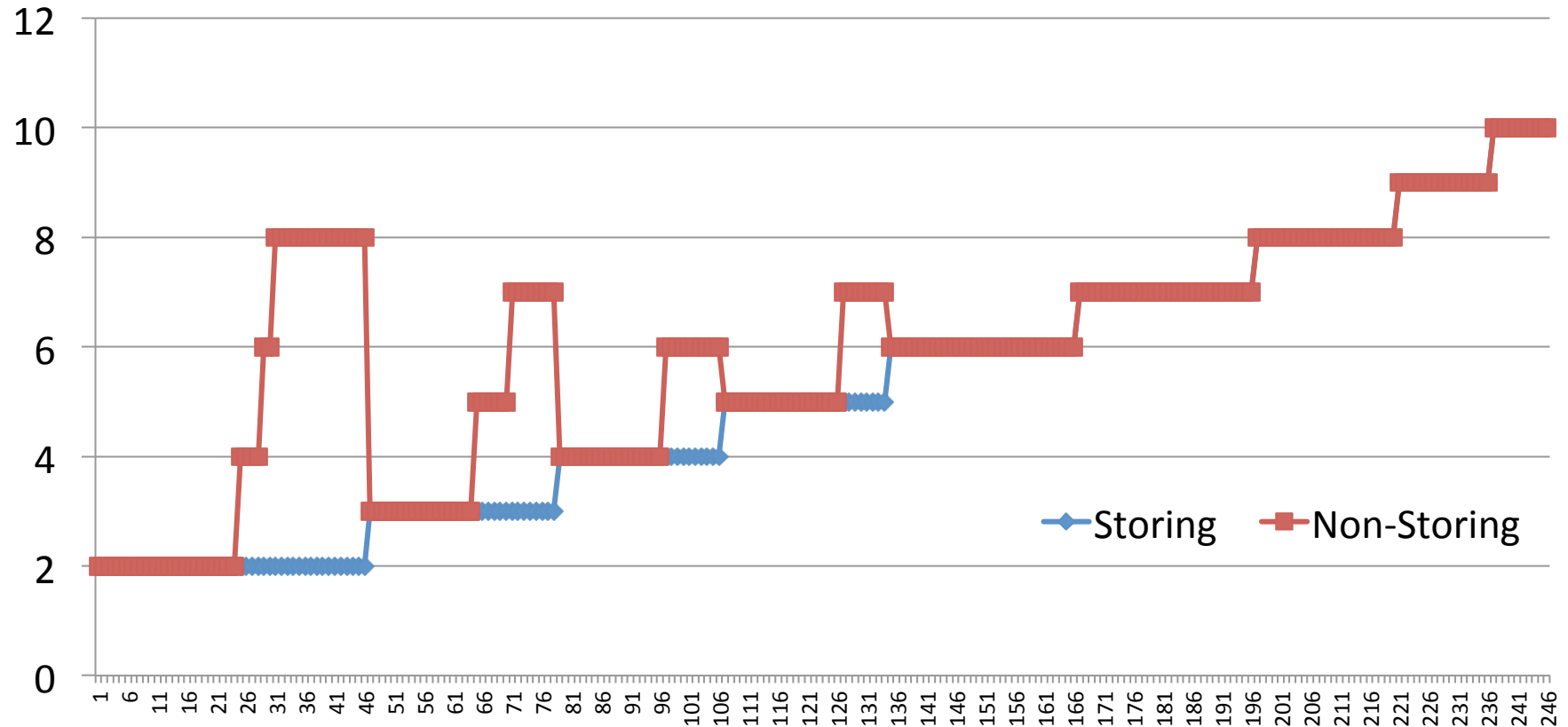
Coordinator ● Controller/Router

Coordinator   Controller/Router

Office Bldg Half Floor: Number of Hops in **One-way** Routes: P2P versus Storing Mode

Office Bldg Half Floor: Number of Hops in One-way Routes: Storing Mode versus Non-Storing Mode

Next Steps

- Multiple independent implementations
- Spec maturing
- Interoperability tests