

ROLL working group

draft-vanderstok-roll-mcreq-02

Multicast Requirements for LLN in Buildings

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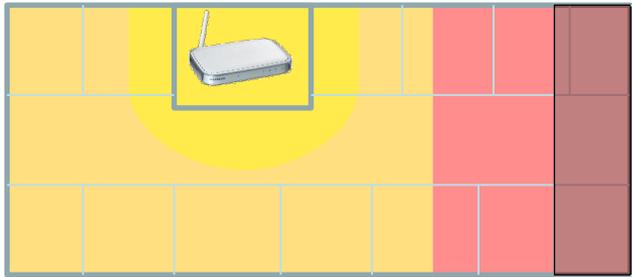
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Multicast in Building Control

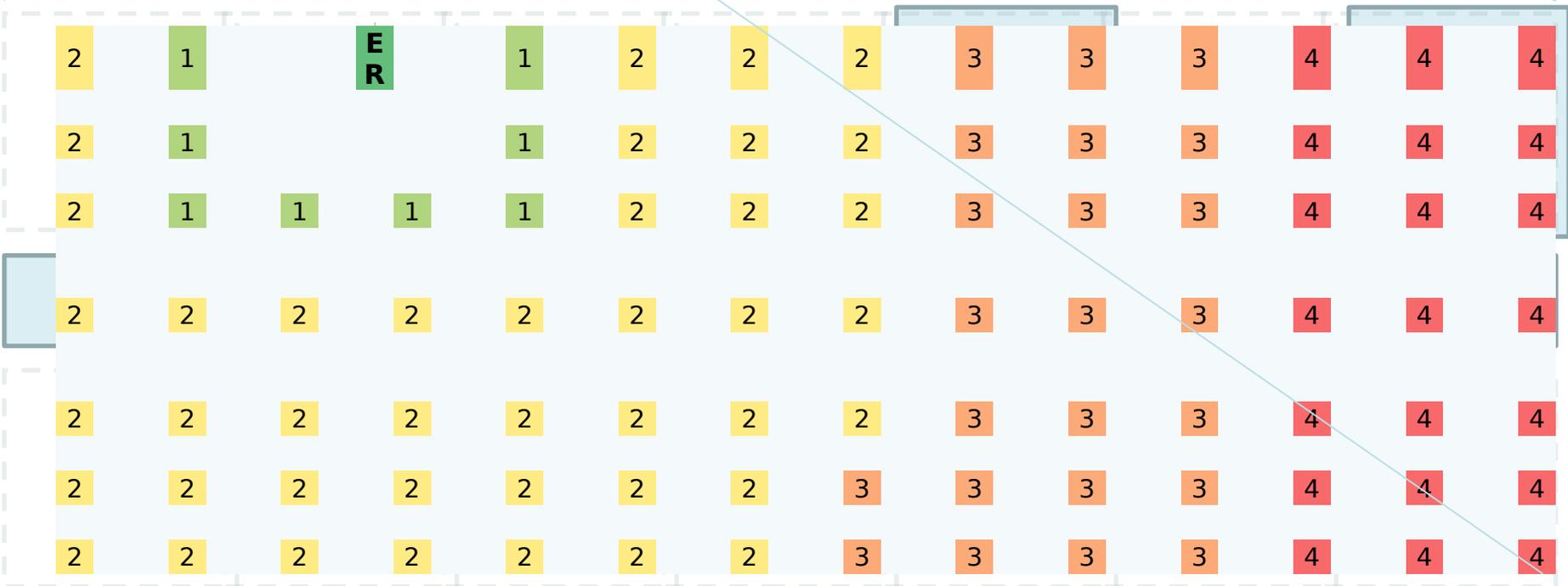
Multicast purposes:

1. Sending messages with bounded delay to set of (nearby) receivers
No response required ([this presentation](#))
2. Service discovery (mDNS) for stand-alone network
Response required

Typical network configuration



Node; X indicates the number of hops a node is away from the ER (i.e. the rank of the node in the ER-rooted DAG)



Operational characteristics

Central requirements:

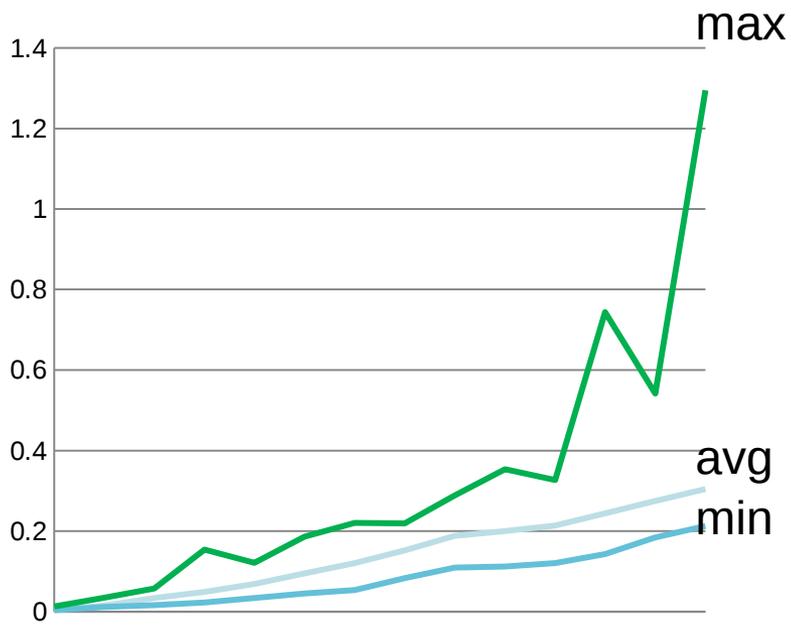
- Agreement
- Timeliness (200 ms); occasionally a message takes 1-2 seconds

Variable network density: node every 30 - 100 cm

In general multicast ranges over one office (6*6 m) or one floor

E2E Delay as function of distance

sec **Delay (9,9)**



Inter-node distance →

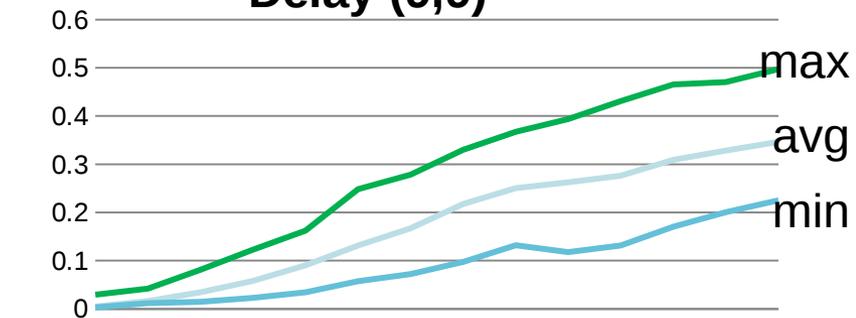
K=1

50-100 neighbors

2-4 neighbors

50-100 neighbors

sec **Delay (9,9)**



Inter-node distance →

K=5

50-100 neighbors

2-4 neighbors

100ms < I_{max} < 500ms

10ms < I_{min} < 30ms

Suggestions to trickle multicast forwarding draft

- Window per sender necessary solution.
- Sending ICMP messages reduces overhead with multiple sources
BUT, relation between forwarding and ICMP message not clear

With one sender, ICMP message creates unnecessary overhead

Suggestion:

ICMP optional per node

Consider receivers which do not forward but send their status

Suggestion:

Forwarding optional

Reduce delay of missing messages

Suggestion:

c-counter per *message* and source