Deterministic Networking Application in Ring Topologies

draft-jiang-detnet-ring-00

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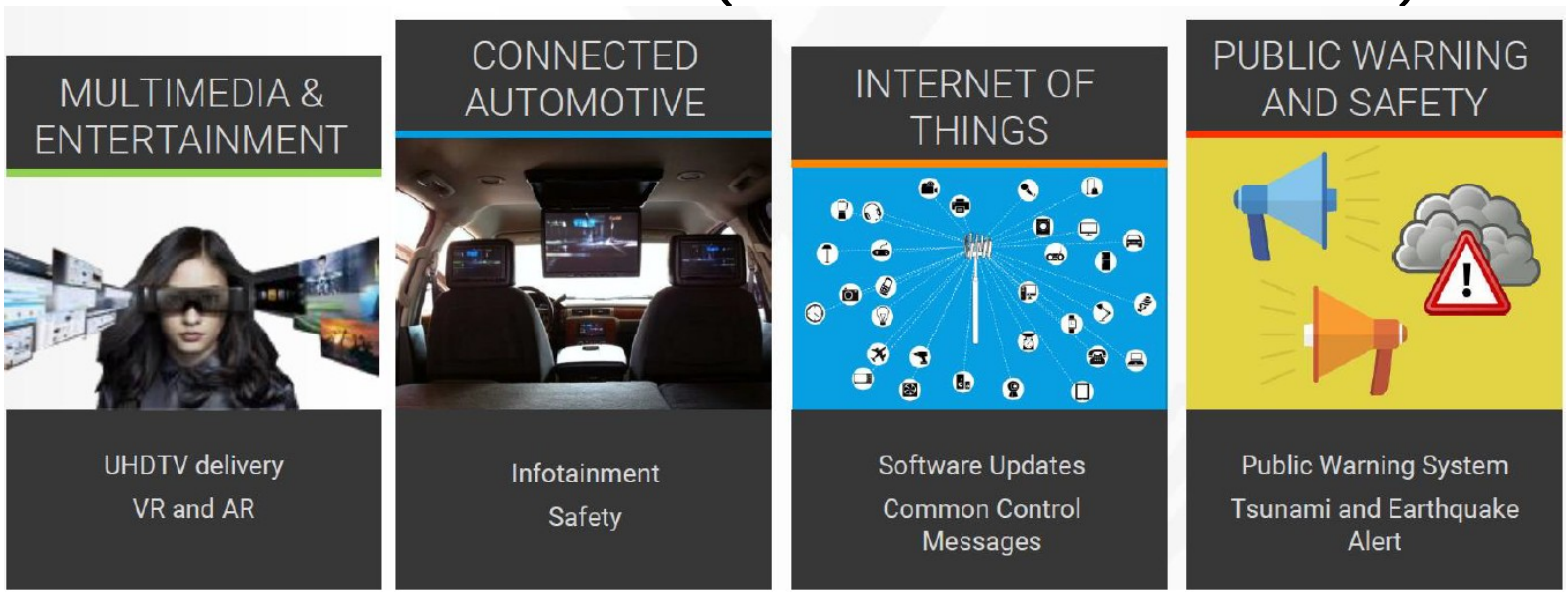
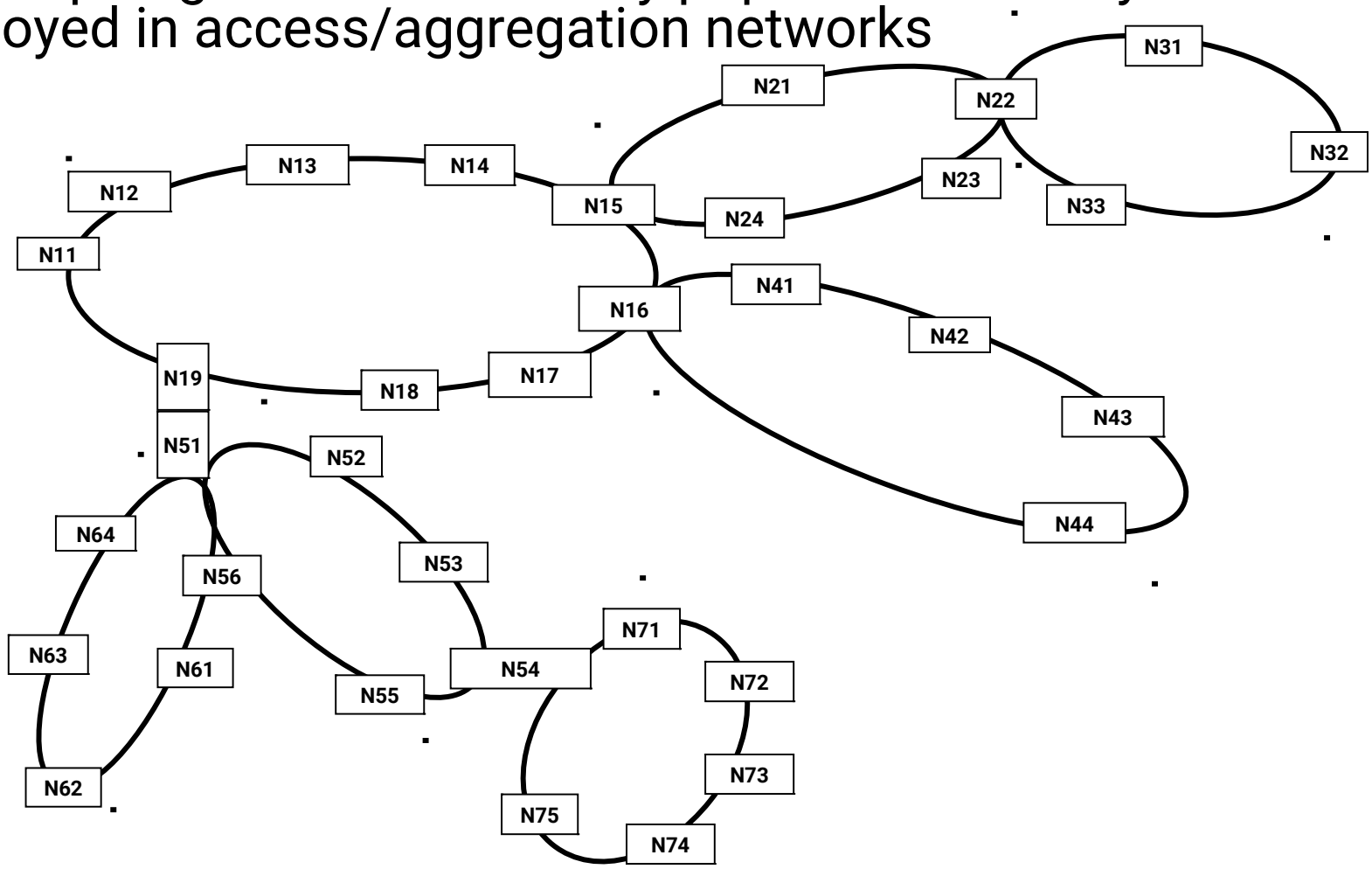
Backgrounds

- Deterministic delay and high availability for multicast services
  - I-D.ietf-detnet-use-cases lists some use cases
  - Multicast /Broadcast is also a key enabler for some 5G use cases (5G-XCAST in 5GPPP):

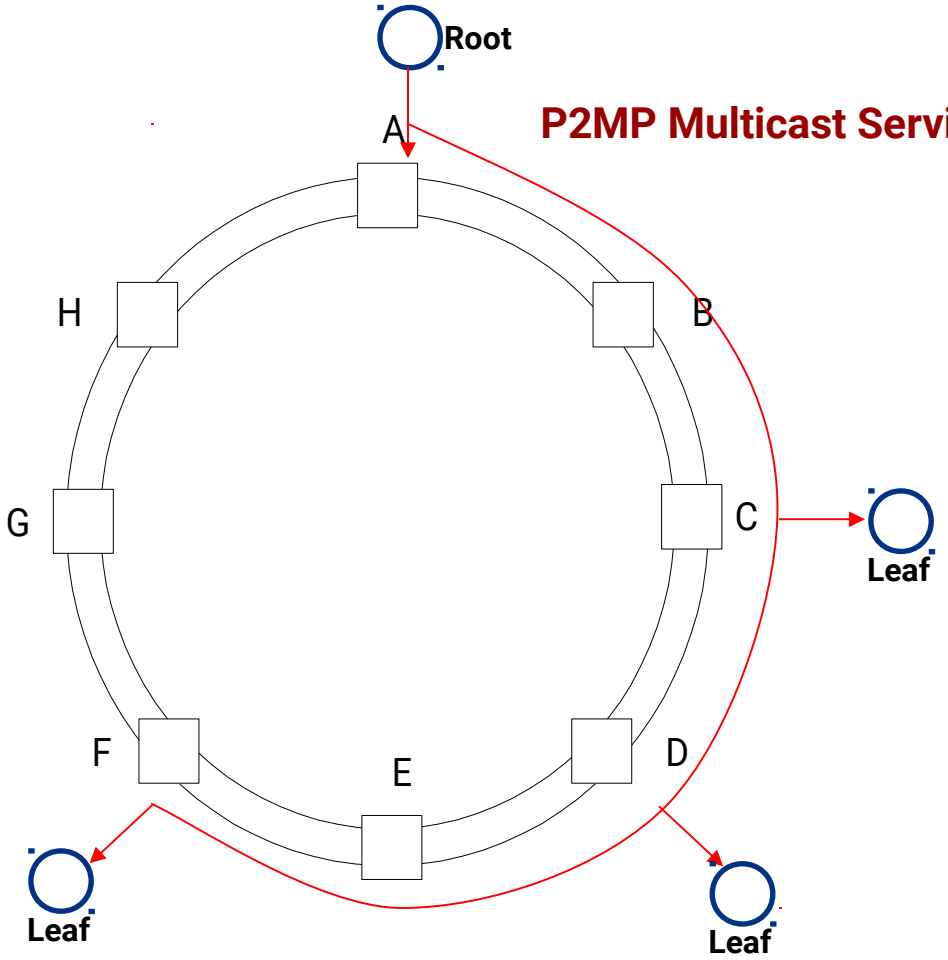


Backgrounds (cont')

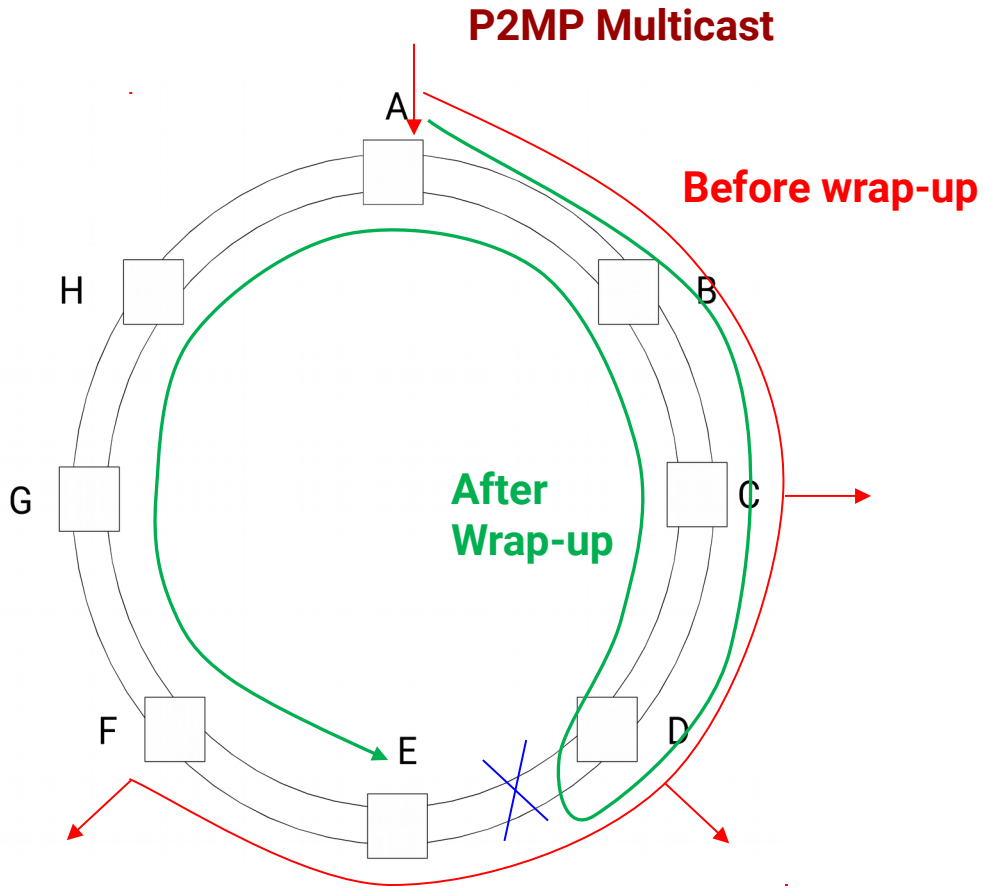
- Ring topologies have been very popular and widely deployed in access/aggregation networks



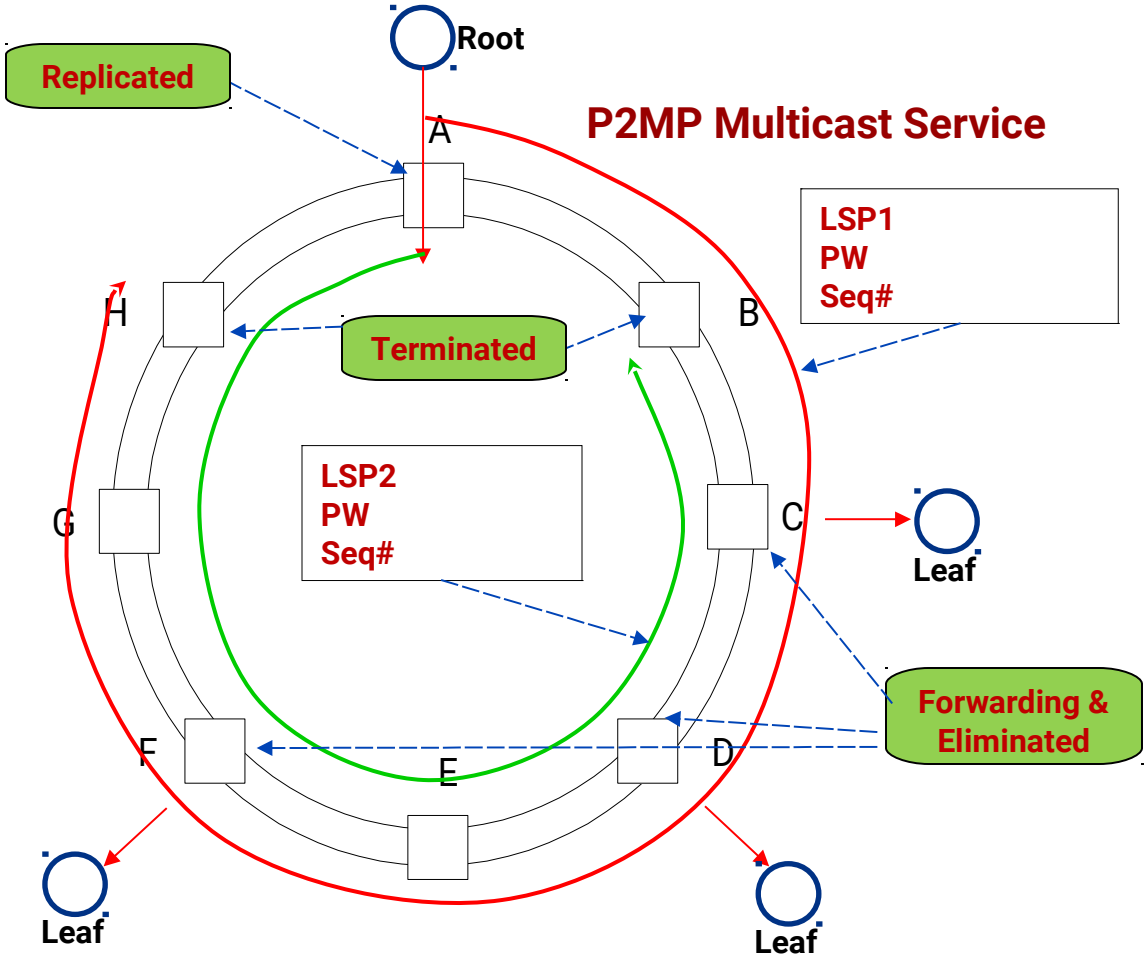
Multicast in a ring



Multicast in a ring

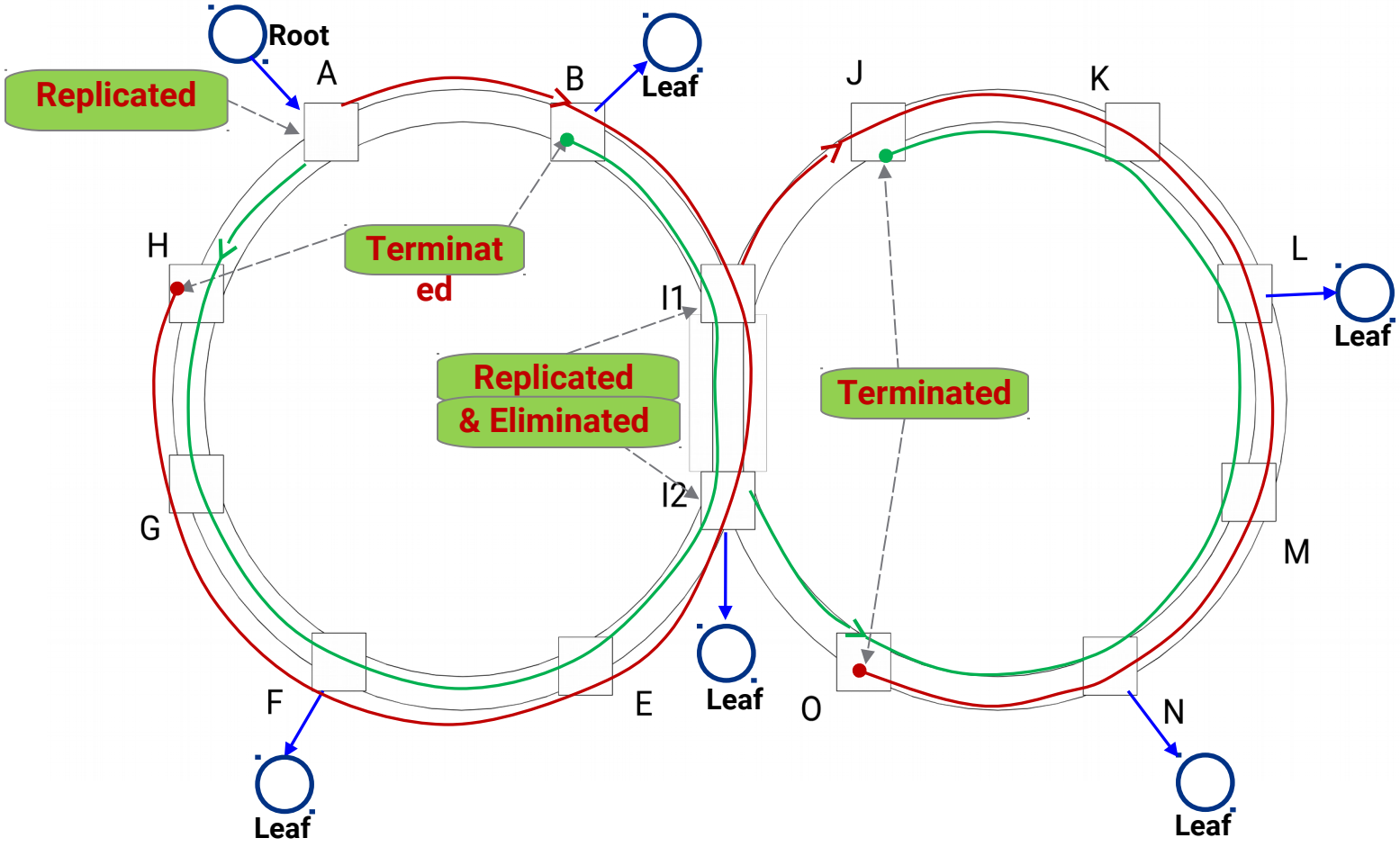


Multicast ring in Detnet



Interconnection of Rings

P2MP Multicast Service



Discussions

- Multicast in a ring is efficient
  - ✓ At most 2 copies of packets are sent, one for CW, and one for CCW
- Evolvable with Detnet
  - ✓ This solution is almost gratuitous for Detnet, both unicast and multicast can use the same mechanism (replication & elimination)
- Issues
  - ✓ Asymmetric path in a ring has influences on elimination, maybe a constraint on maximum packet rate of a Detnet service

Next Step

- The authors would like to request more WG feedbacks

Thank You