Deterministic Networking Application in Ring Topologies

draft-jiang-detnet-ring-00

Yuanlong Jiang (jiangyuanlong@huawei.com)
Norman Finn (norman.finn@mail01.huawei.com)
Jeong-dong Ryoo (ryoo@etri.re.kr)
Balazs Varga (balazs.a.varga@ericsson.com)
Liang Geng (gengliang@chinamobile.com)
**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):
Ring topologies have been very popular and widely deployed in access/aggregation networks.
Multicast in a ring

P2MP Multicast Service

Leaf

Root

A

B

C

D

E

F

G

H

101st IETF - London
Multicast in a ring

P2MP Multicast

Before wrap-up

After Wrap-up
Multicast ring in Detnet

P2MP Multicast Service

Replicated

Terminated

LSP1 PW Seq#

Forwarding & Eliminated

Leaf

Leaf

Leaf

Leaf

101st IETF - London
Interconnection of Rings

P2MP Multicast Service

Replicated
Terminated
Replicated & Eliminated
Terminated

Root
Leaf
Leaf
Leaf
Leaf
Leaf
Leaf
Leaf
Leaf
Leaf
Leaf
Leaf
Leaf
Leaf

101st IETF - London
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