

draft-francois-segment-routing-ti-lfa-00

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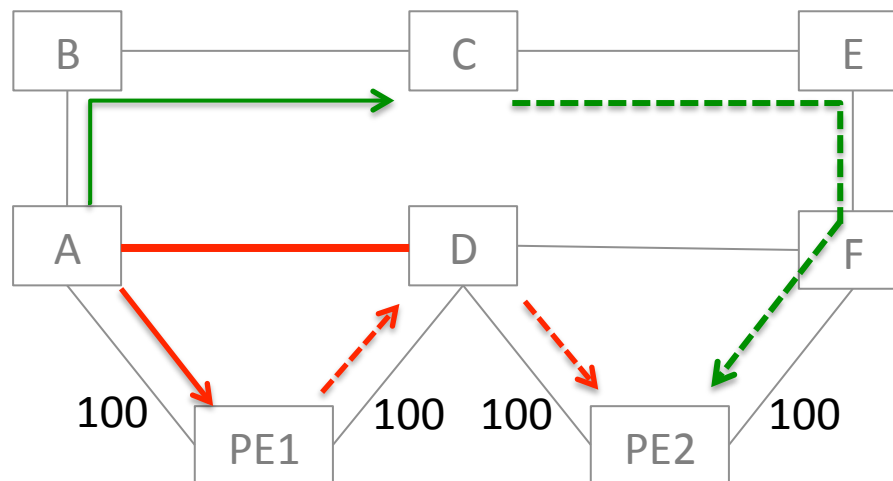
IETF 89, RTGWG WG

Topology Independent Fast Reroute using Segment Routing

- Fast Reroute
 - Local protection of traffic against sudden failures of links and nodes
 - IP-FRR behavior when SR comes into play
- Topology Independent *coverage*
 - Full coverage for link and node protection
- Segment Routing
 - Leveraging the SR architecture allows to enforce any failover path

Which failover path?

- New in IP-FRR:
Post-convergence path from the PLR to the destination



— LFA
— TI-LFA

Why that choice?

- Post-convergence path
 - Typically in line with capacity planning
 - Easy to predict
- SR: No need for TLDP sessions
 - Useless to favor LFA over RLFA over...
 - Easier to provide the path that the operators actually want

Exercise

- draft-ietf-rtgwg-lfa-manageability-01
 - Cases where default IP-FRR behavior is not ideal
 - Need for manageability to enforce an ideal path
 - Turns out to always be the post-convergence one...
- Common sense
 - The operator configures metrics to obtain optimum paths for its services (bw, delay, ...)
 - The PLR should respect such objectives upon FRR

How to do TI-LFA

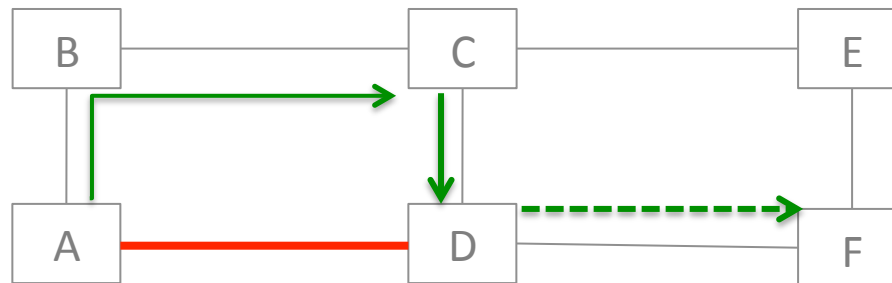
- Enforcing loop-freeness on post-convergence path
 - Where can I release the packet?
 - At the intersection between the new shortest path and the per-destination Q-Space of the destination
 - How do I reach the release point?
 - By chaining intermediate segments that are assessed to be loop-free
- Maths: homework
- How many segments?

How many segments?

- Link protection, symmetric topology:
 - Maximum 2, guaranteed
 - Most often, 1 is enough
 - When a post-convergence LFA is available: 0
- Link protection, asymmetric topology
 - Many asymmetric nets where 2 was the max
 - A few cases here and there were a bit more are needed for a couple of links
- Node protection
 - Never more than 4, rarely more than 2
- -01 contains numbers
 - Eager to increase the number of case studies

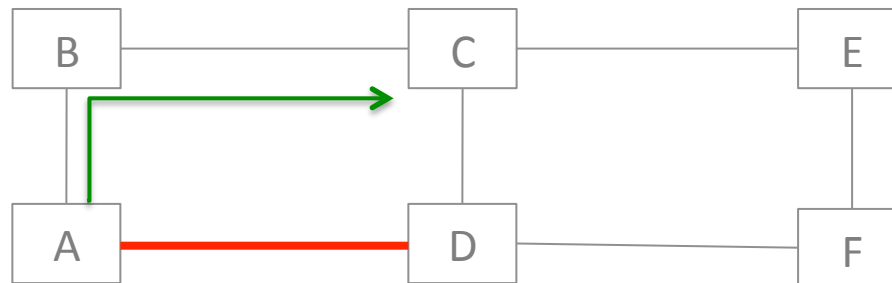
Protecting AdjSID's

- Packet with 2 top ADJ SIDs [AD, DF, ...]
 - The packet should go to D
 - Repair: [C, D, *DF*, ...], oif B



Protecting AdjSID's

- Packet with 1 top ADJ SID [AD, F, ...]
- Option
 - The packet could go to D
 - Repair: [C, D, F, ...], oif B
 - The packet could go directly to F
 - Repair: [C, F, ...], oif B



Summary

- FRR for Segment Routing
 - Node and Adjacency Segments
 - No more TLDP session required for FRR purposes
- Full coverage
 - More than 2 segments are rarely needed
- Post-convergence paths
 - Better fit with capacity planning
 - Respect of the ISP policy
- 1 implementation available
 - At least one more on the way

Thank you!