

draft-litkowski-rtgwg-spf-uloop-pb-statement
IETF 90 - Toronto

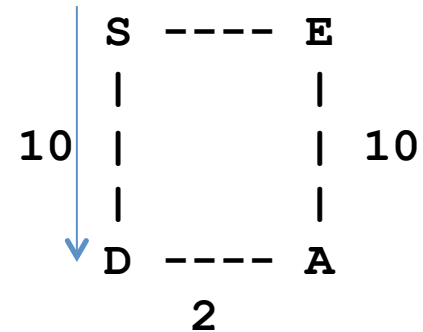
S. Litkowski, Orange

Introduction

- The draft analyses how different implementations of IGP link state protocols may favor microloops
- The draft does not propose any solution but calls for standardizing some new components of IGP (apart of the protocol itself)

Microloops (reminder ... 😊)

- Traffic goes from S to D
- When SD fails, if D converges before E, the traffic will loop until E has converged
- Why taking care about microloops ?
 - See our other draft :
 - draft-ietf-rtgwg-uloop-delay



IGP convergence influence on microloops

- IGP convergence time difference between nodes is critical in the microloop phenomenon
 - Components of IGP LinkState convergence :
 - Detection (direct or indirect through protocol notification) → May be hundreds of msec (theoretically)
 - SPF delay ← Hundreds of msec or seconds
 - SPF computation time ← Negligeable with current CPUs (x msec)
 - RIB/FIB insertion ← HW and implementations are more and more powerful in this area
- May favor microloops
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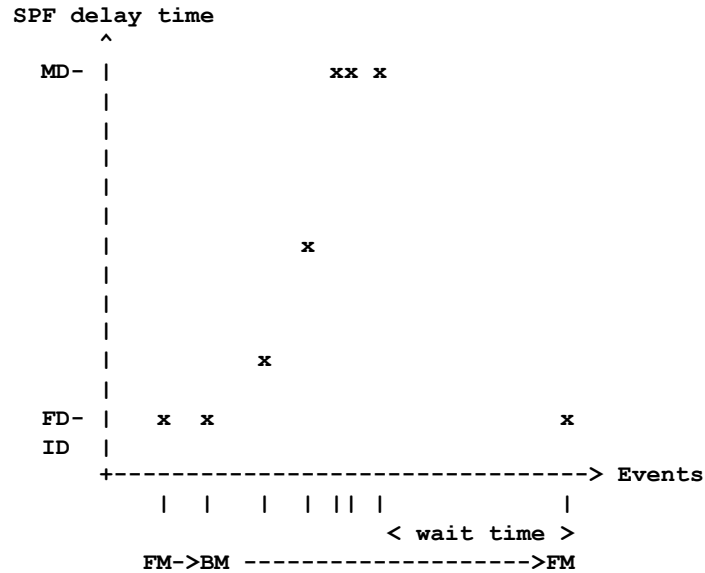
SPF trigger strategies

- Multiple implementation exists :
 - Always compute full SPF
 - Run Full SPF only when required
 - If a link fails, two LSPs are sent, if a SPF has already been computed for LSP1, there is no need to run full SPF for LSP2 (topology has not change)
 - If topology does not change, only recomputes reachability

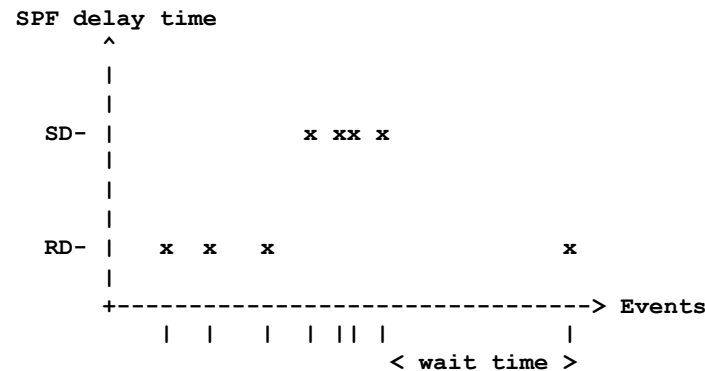
SPF delay strategies

- Most (all) implementations are introducing variable delays before running SPF in order to manage churns

- Major implementations :
 - Exponential backoff



- Two steps (rapid/slow mode)

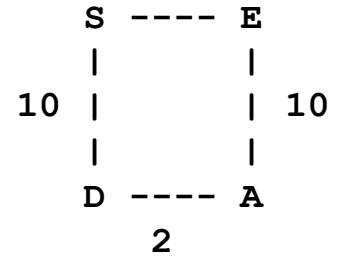


Mixing strategies in a network

- Consider :

- S strategy :

- Full SPF triggered only when necessary
 - Two step SPF delay (Rapid=150ms,Rapidruns=3,Slow=1s)
 - Separate timer is used for SPF delay and PRC delay but same values



- E strategy :

- Always compute full SPF (no PRC)
 - Exponential backoff SPF delay (FD=150ms,ID=150ms,max=1s)

Proposed work items

- Standardize SPF trigger strategy
- Standardize SPF timer scope :
 - Single timer for all computations, or multiple ...
- Standardize progressive SPF delay algorithm

Non goal

- Other parameters may be standardized like flooding strategies
- Flooding strategies are critical piece of codes in implementation that may be not so easy to touch ...

What's next ?

- WG feedback ?
- Do WG consider that this is an item to work on ?
 - We DO !
 - Simple to agree and implement ... and will help to minimize microloops duration or occurrences.