LS Distributed Flooding Reduction

draft-cc-lsr-flooding-reduction-03

Huaimo Chen (huaimochen@huawei.com)
Dean Cheng (dean.cheng@huawei.com)
Mehmet Toy (mehmet.toy@verizon.com)
Yi Yang (yyietf@gmail.com)
Aijun Wang (wangaj.bri@chinatelecom.cn)
Xufeng Liu (xufeng.liu.ietf@gmail.com)
Yanhe Fan (yfan@casa-systems.com)
Lei Liu (liulei.kddi@gmail.com)
Overview

- Removed the centralized flooding reduction, and related
- Updated distributed reduction to interact with leader
- Added scheduler and consistency check
Scheduling for Flooding Topology Computation (FTC)

- RFC8541 Impact of SPF Trigger and Delay Strategies on IGP Micro-loops
  Using different schedulers may cause more micro routing loops due to discrepancies of timers
  Using similar timers (values and behavior) for all as a best practice, but sometimes it is not possible
  - Expect a standard/same scheduler for SPF

- Need a standard/same scheduler for FTC to let all run FTC same time

- Consider 2 schedulers
  1) One with double delay (initial-delay, min-hold, max-wait)
  2) Another with constant delay (cons-delay, num-of-runs, max-wait)
Parameters for Distributed Flooding Reduction

After distributed flooding reduction is selected,

- Every node MUST receive leader sub-TLV indicating
  - Algorithm to be used
  - Distributed mode
- Every node SHOULD receive parameters for scheduler if configured

```
+-----------------+-----------------+-----------------+-----------------+-----------------+
| Type (TBD1)     | Length (8)      | initial-delay   | minimum-hold-time|
+-----------------+-----------------+-----------------+-----------------+
| maximum-wait-time| Reserved (MUST be zero) |
+-----------------+-----------------+-----------------+-----------------+
```

OSPF Scheduler Parameters sub-TLV
Flooding Topology (FT) Consistency

- FT computed by one need be same as FT computed by another
- 2 FTs are different, inconsistency occurs, need be detected and handled accordingly

- RFC 5613 defines Extended Options and Flag (EOF) TLV in OSPF Hello
  - A new flag bit (bit 30 suggested), called link on flooding topology (FT-bit for short), is defined in EOF TLV
  - For a link between node A and node B, A (B) sends B (A) Hello with FT-bit set to one when the link is on the FT it computes.
  - If Hellos from the two nodes have the same FT-bit value, then the FT for the link between the two nodes is consistent; otherwise, it is not consistent.
  - When inconsistency detected, a warning is issued/logged, assumes that the link is on the FT temporarily and floods the link states over the link.
Welcome comments
Request for adoption