OSPF Extensions for Link State Database Synchronization Group
draft-ylz-ospf-lsdb-sync-group-00

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Background Introduction

- Devices of access layer have the following characteristics:
  - Huge devices.
  - Performance is not enough to support the big LSDB and the big routing table.
Cost of System

• Access Device
  ✓ Poor CPU and Less Memory.
  ✓ Can not support many routes.
  ✓ Can not process many flooding packets.

• Aggregate Device
  ✓ 500 – 1000 peers or more.
  ✓ Too many flooding process.
    ➢ Stability of neighbor
    ➢ Convergence time

• Multiple Area?
  ✓ Is it ABR router? Schedule Problem?
  ✓ SPF schedule, Summary LSA generate and Route aggregate.
Method: Sync Group

- **Goal:** Reduce the usage of CPU/Memory of the access device and traffic of flooding.
- Sync Group = Area in Area.
- The adjacency only is made between the routers with same group ID.
- The LSDB will be synchronized within Sync Group only.
- The “Group Member Router” will add the default route to the nearest “Group Master Router”.
- The LLS is used to indicate the router support SYNC GROUP.
- The RI LSA is used to indentify the “Group Master Router”.

![Diagram of OSPF with Sync Groups](image)
OSPF extension

- New TLV will be added to LLS.

  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
  +-----------------------------------------------+
  |         Type (TBD)            |              4   |
  +-----------------------------------------------+
  |                   Synchronization Group ID      |
  +-----------------------------------------------+

- New TLV in Router Information LSA

  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
  +-----------------------------------------------+
  |           Type              |             Length  |
  +-----------------------------------------------+
  |          Flags              |            Reserved |
  +-----------------------------------------------+
  |                  Synchronization Group ID       |
  +-----------------------------------------------+
  |                  Synchronization Group ID       |
  +-----------------------------------------------+

Flags (2 octet):

  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
  +-----------------------------------------------+
  |       Reserved        |S|M| (M – Group Master/Member Role bit) |
  +-----------------------------------------------+
Challenge: Inconsistency of LSDB

- There exists inconsistency!
- The path from RTA to RTB?
  - RTA to RTC to RTB?
  - RTA to RTD to RTF to RTE to RTB?
- How to avoid the route loop?
- Method 1: Routing calculation of RTA/RTB/RTC (The router is not in SYNC group) are modified to avoid the path through the SYNC group.
- Method 2: Update the router LSA of “Group Master Router” to remove the link to “Group Member Router”. And associated SPF process also need be updated.
Next Steps

• Keep on research to get final solution about path calculation.
• Welcome comments on mailing list.