Area Proxy
draft-li-lsr-isis-area-proxy
Changes since IETF 106

- Added SR support specifics
- Proposing a new SID: Area Segment SID
  - Distributed by Area Leader
  - Accepted by Inside Edge Routers (anycast)
- Advertised in Proxy LSP
Area Segment SID TLV

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 |
+-------------------+--------------------+--------------------+
| SID/Index/Label (variable) |
+-------------------+--------------------+--------------------+
Changed TLVs

• Changed Area Proxy TLV to have subTLVs:
  • Area Proxy System ID subTLV
  • Area Segment SID subTLV
Area Proxy TLV & Area Proxy System ID subTLV

```
| TLV Type | TLV Length | Sub-TLVs |
+----------+-----------+----------|
```

```
| Type     | Length    | Proxy System ID                       |
+----------+-----------+---------------------------------------|
```

```
| Proxy System Identifier continued |
+-----------------------------------|
```

Area Segment SID subTLV
Inside Node TLV

- Used by Inside Nodes and Pseudonodes to indicate that they are inside.

```
0                   1
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|     Type      |     Length    |
+-+-+-+-+-+-+-+     +++++++++++++++++
|     |     |
+-----+-----+
```
More changes

• Fleshed out specifics for Proxy LSP contents — Enumerated obvious relevant TLVs and their handling
  
  • TLVs: Protocols Supported, Area Address, Dynamic Hostname, IS Neighbors, Extended IS Neighbors, MT Intermediate Systems, Reachability (6), Router Capability, Multi-Topology, SID/Label Binding, MT SID/Label Binding, Area Segment SID

• Implementation in progress, basics all working

• Still seeking WG adoption
Hierarchical IS-IS

draft-ietf-lsr-isis-extended-hierarchy
Changes since IETF 106

- Replaced Area Identifier TLV with Area Hierarchy TLV

- Publish entire hierarchy to protect against misconfiguration. Added an Appendix discussing the issue.

```
+-----+-----+-----+-----+-----+-----+-----+
| 8 7 6 5 4 3 2 1 |
+-----+-----+-----+-----+-----+-----+
| 8 7 6 5 4 3 2 1 |
| +-----+-----+-----+-----+-----+-----+
| 8 7 6 5 4 3 2 1 |
| +-----+-----+-----+-----+-----+-----+
| 8 7 6 5 4 3 2 1 |
| +-----+-----+-----+-----+-----+-----+
| 8 7 6 5 4 3 2 1 |
| +-----+-----+-----+-----+-----+-----+
| 8 7 6 5 4 3 2 1 |
| +-----+-----+-----+-----+-----+-----+
| 8 7 6 5 4 3 2 1 |
```

- Supp-Levels: Bit mask of supported levels
Changes continued...

- Level Specific Area ID: 16 bits
- Clarification of Adjacency formation rules
Preventing Cross Branching

Neither Router A nor Router C can tell by inspecting hellos that not all routers in Level 3 area 30 have been configured to support the same Level 4 area. Cross Branching may be introduced after an area has been up and running for a long time.

Solution: Have all routers advertise full hierarchy.

Now Rtr B/Rtr C can detect mismatch at L4 when forming L3 adjacency.
Preventing Cross Branching(2)

• Routers MUST advertise at least one LSAI for all levels (2-8) even if they do not support all the levels.
• Advertise “dummy” LSAI (e.g., “0”) for levels not yet supported by any router in the network
• Adding a level can be achieved by configuring second LSAI on all routers in that branch – followed by removing the dummy LSAI

Legacy Routers

• No Area Hierarchy TLV will be advertised by legacy routers
• This could cause mismatched hierarchies at Level 1 or Level 2
• These can be detectedreported by inspecting Area Hierarchy TLVs in the level specific LSPs