IS-IS Spine-Leaf

IETF 98 Chicago

draft-shen-isis-spine-leaf-ext-03

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Naiming S., Les G., Sanjay T.

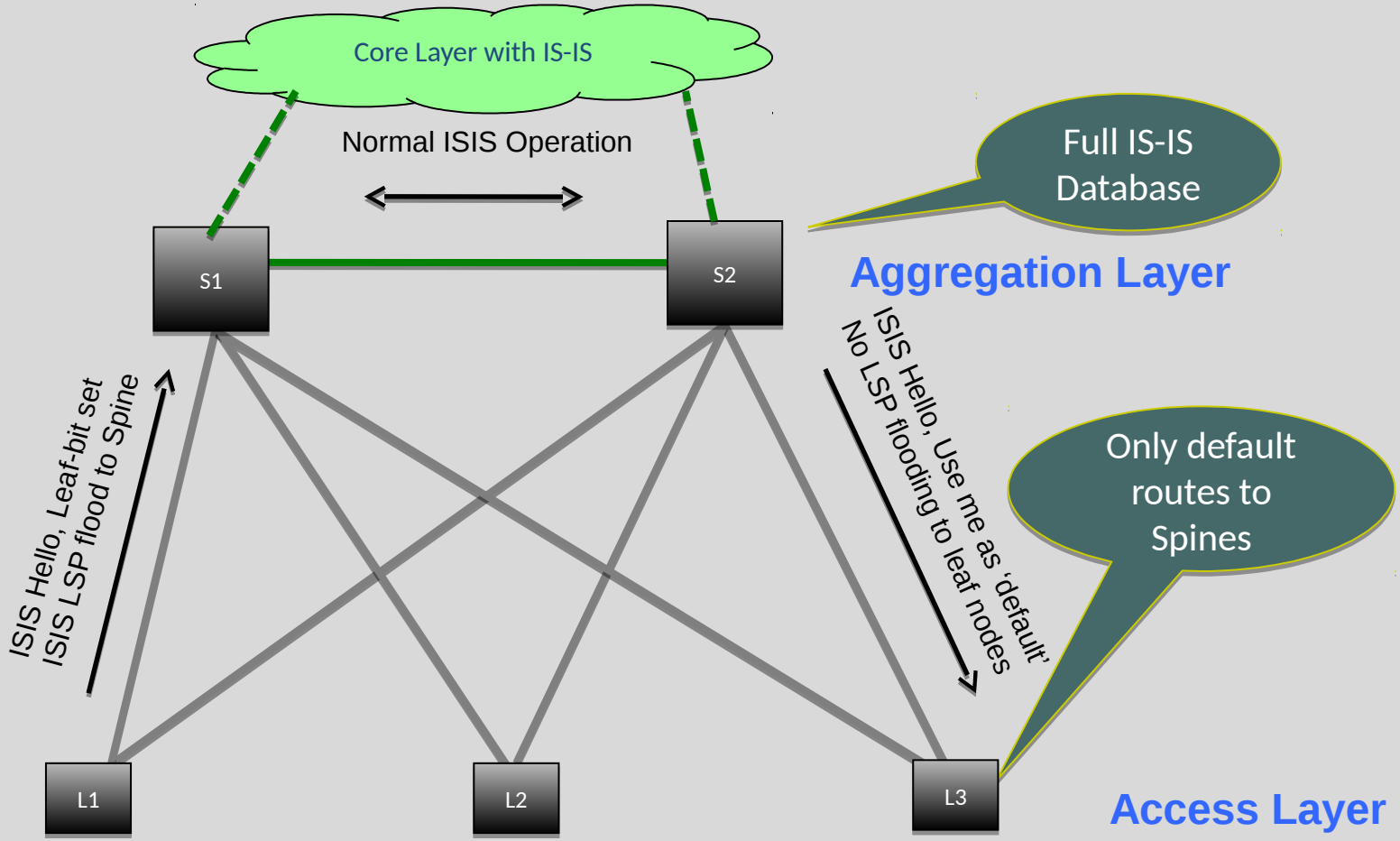
Agenda

- Summary
- Extension Basics
- TLV in Hello and CS-LSP
- Link and Node Down (Pure Clos)
- Spine-Leaf Discussion

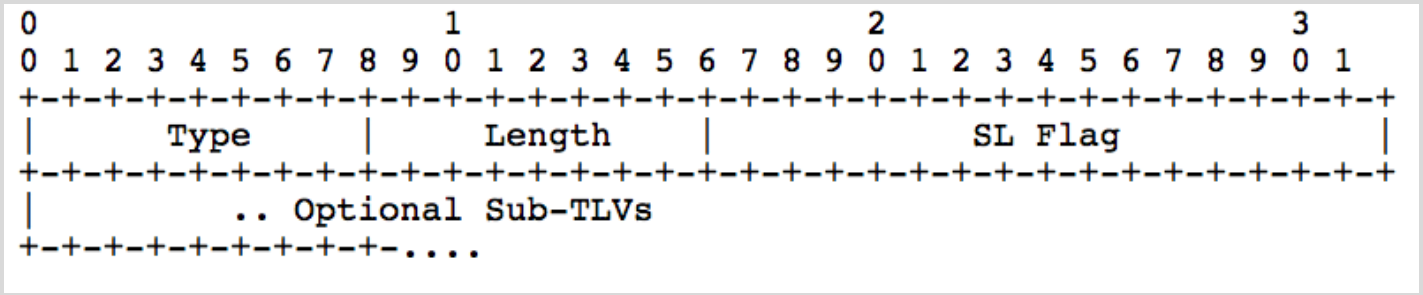
Summary

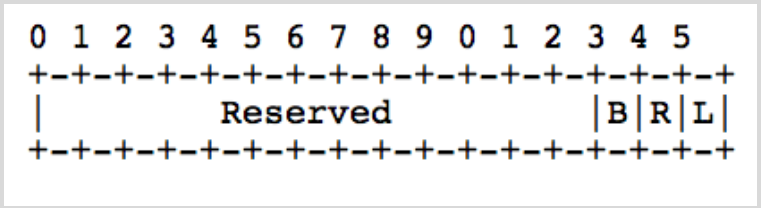
- Spine-Leaf draft first published in Nov. 2015
- Most recent version 03 first was presented in RTGWG Interim meeting Jan 2017
- The new version is on top of the basic spine-leaf extension, added the ‘negative routing’ scheme to handle the pure CLOS
- This draft is zero-flooding and zero topology for ToR switches, enables IS-IS routing fit better in DC and enterprise environment

Extension Basics



TLV in Hello/CS-LSP

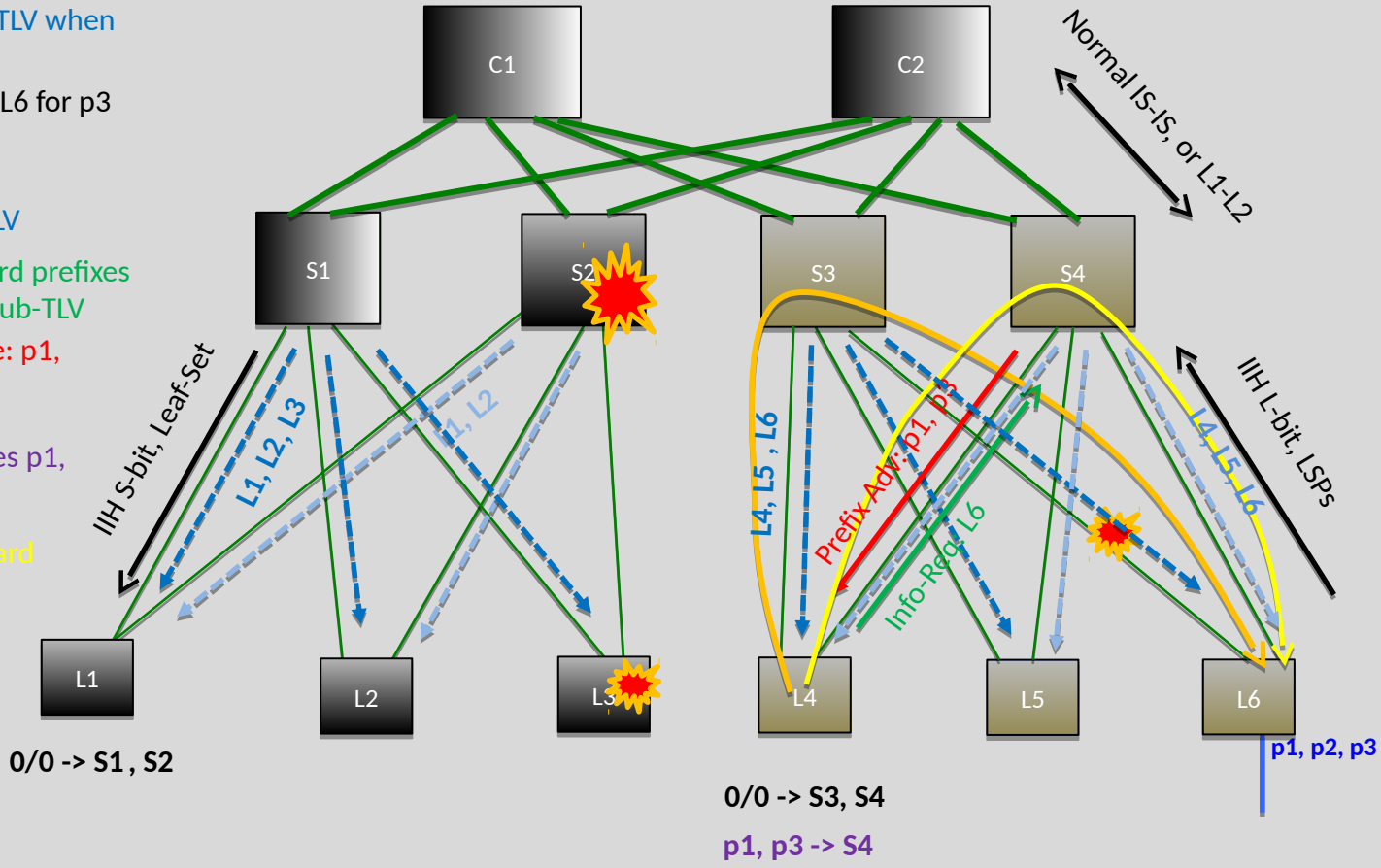




- L: Leaf mode bit; R: Default Route Gateway bit; B: Leaf-Leaf bit
- IS-IS *Reverse Metric* from Spine to Leaf nodes
- Optional Sub-TLVs in CS-LSP: ***Leaf-Set***, ***Info-Req***

Link/Node Down (CLOS)

- S1-S4 include Leaf-Set sub-TLV when sending Spine-Leaf TLV
- L4 picks S3 0/0, forward to L6 for p3
- **S3-L6 link down**
- S3 Leaf-Set lost L6 in sub-TLV
- L4 picks S4, sending "forward prefixes behind node L6" Info-Req sub-TLV
- S4 replies with "Prefixes are: p1, and p3 for L6" with IP/IPv6 Reachability
- L4 adds more specific entries p1, p3 with nexthop to S4
- L4 picks S4 lookup p3, forward to L6 for p3
- **Leaf L3 Node down. Nothing special to do**
- **Spine S2 Node down. Nothing special to do**



Node Down

Link Down

Spine-Leaf Discussion

- Other networks vs DC networks (this draft helps to meet the DC special requirements)
- One protocol vs 2+, does it really matter
- Other rich features (past 20 years) using e.g. BGP-EVPN or other overlay protocols, multicast, TE, SR, etc.
- Topology-less on leaf nodes can also do TE.
- Discussion on-going with Open-Fabric co-authors to see how to compile the IS-IS signaling
- Welcome comments and reviews