

# IS-IS Spine-Leaf

*IETF 100 Singapore*

*DCRouting BOF*

*draft-shen-isis-spine-leaf-ext-04*

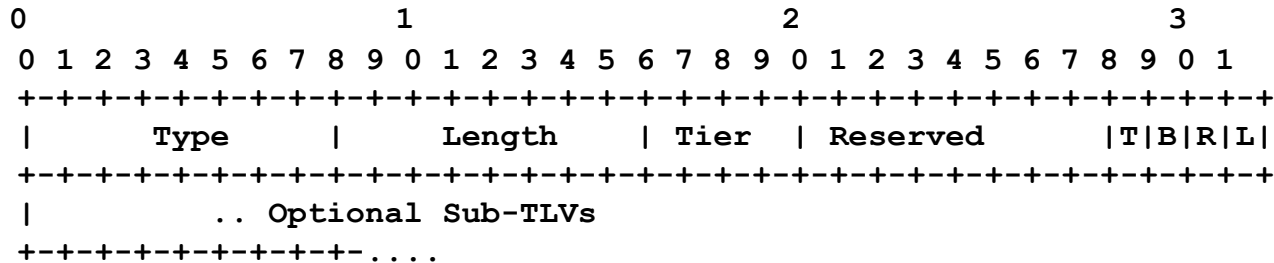
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# DC IS-IS Spine-Leaf

- Reuses well deployed protocol for DC fabric supporting large number of network routing features
- Supports full routing in small/median DC and serves as a DC fabric for overlay routing
- Supports Auto-tier discovery and protocol configuration for ZTP
- Minimizes IS-IS LSP flooding due to DC topology and characteristics
- Handles link/node DOWN events in spine-leaf topology to avoid black holes

# TLV in Hello/CS-LSP

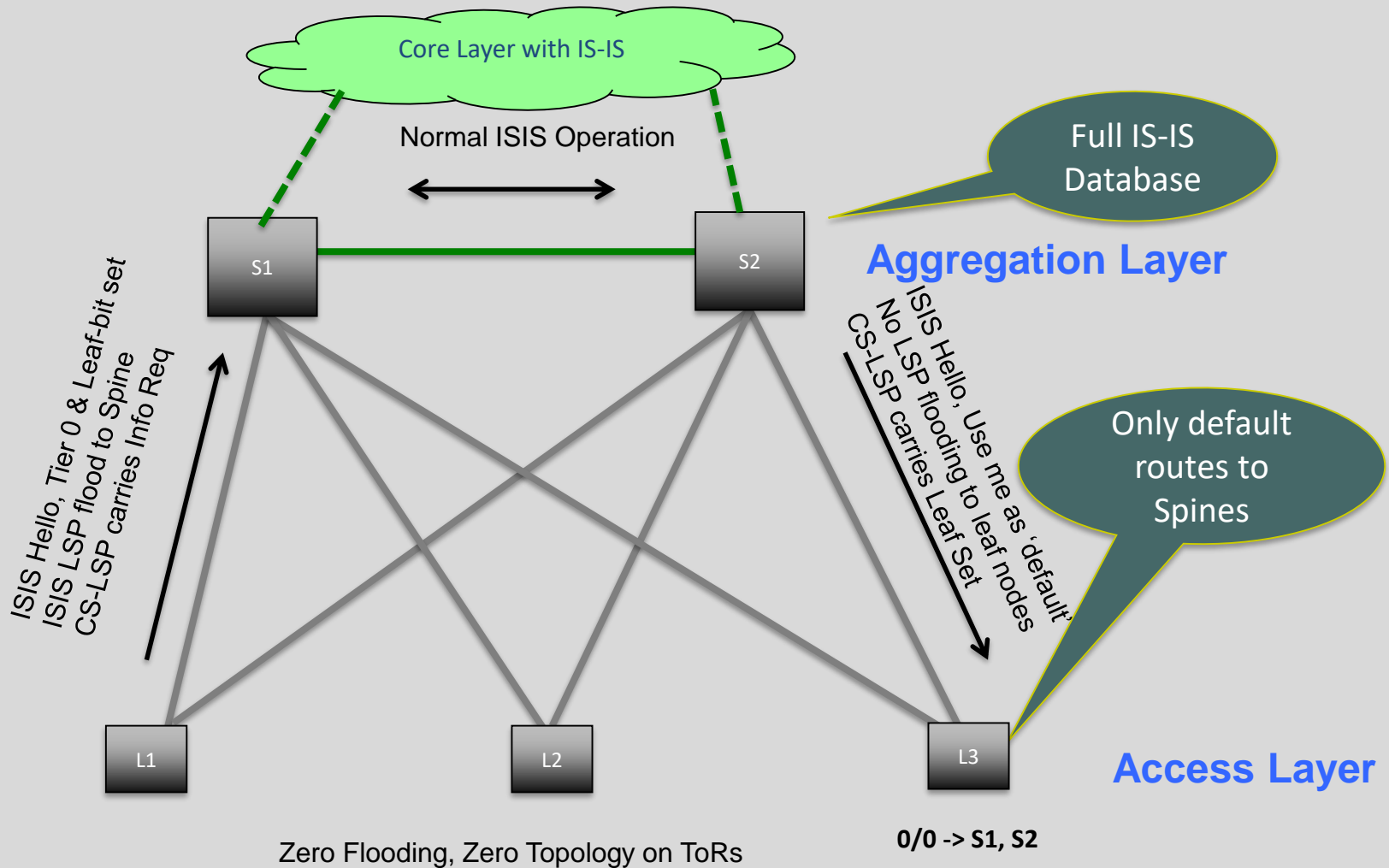


- T bit: Tier field is valid
- L: Leaf mode bit – enables reduced flooding
- R: Default Route Gateway bit
- B: Leaf-Leaf bit (backup gateway)
- Optional Sub-TLVs in CS-LSP: **Leaf-Set, Info-Req**

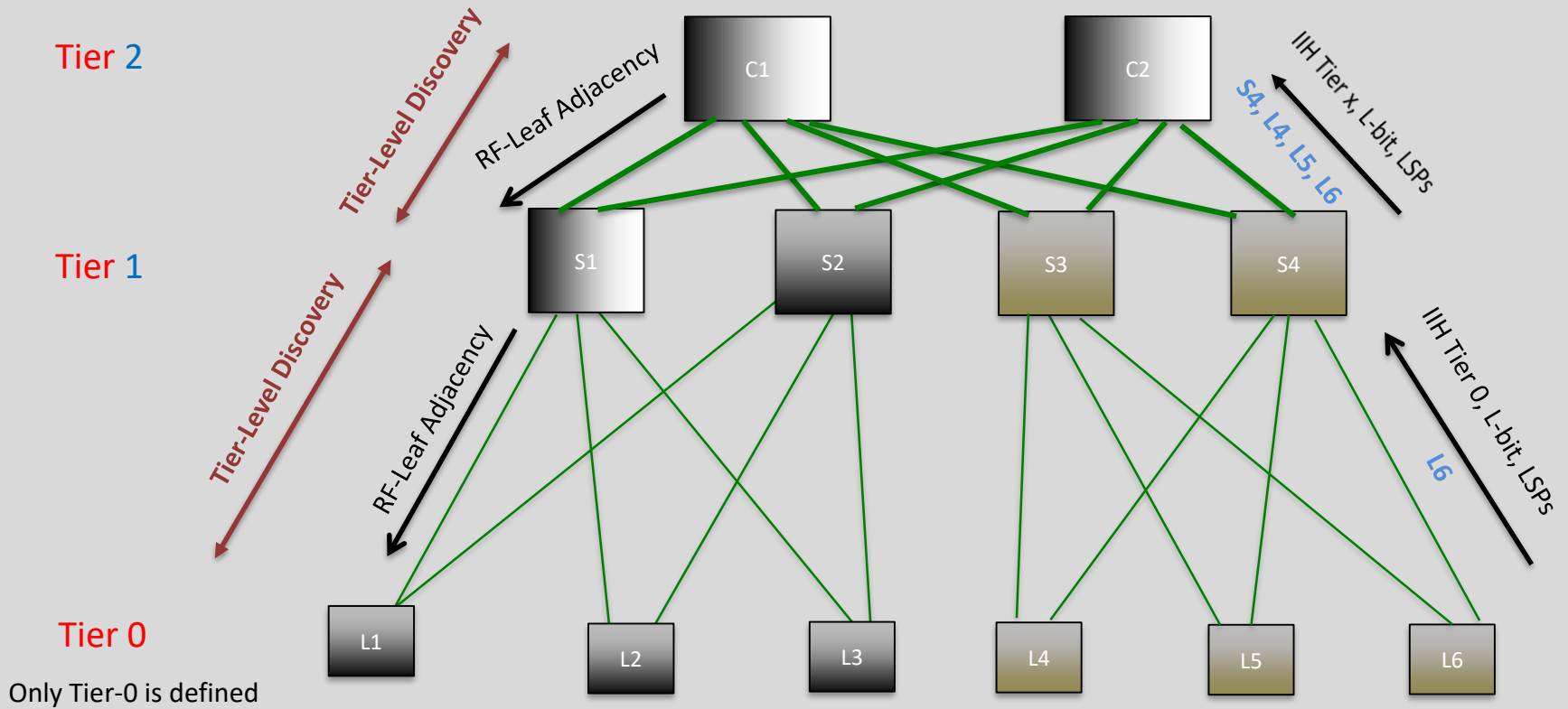
*blue: sent by leaf nodes*

*green: sent by spine nodes*

# Extension Basics

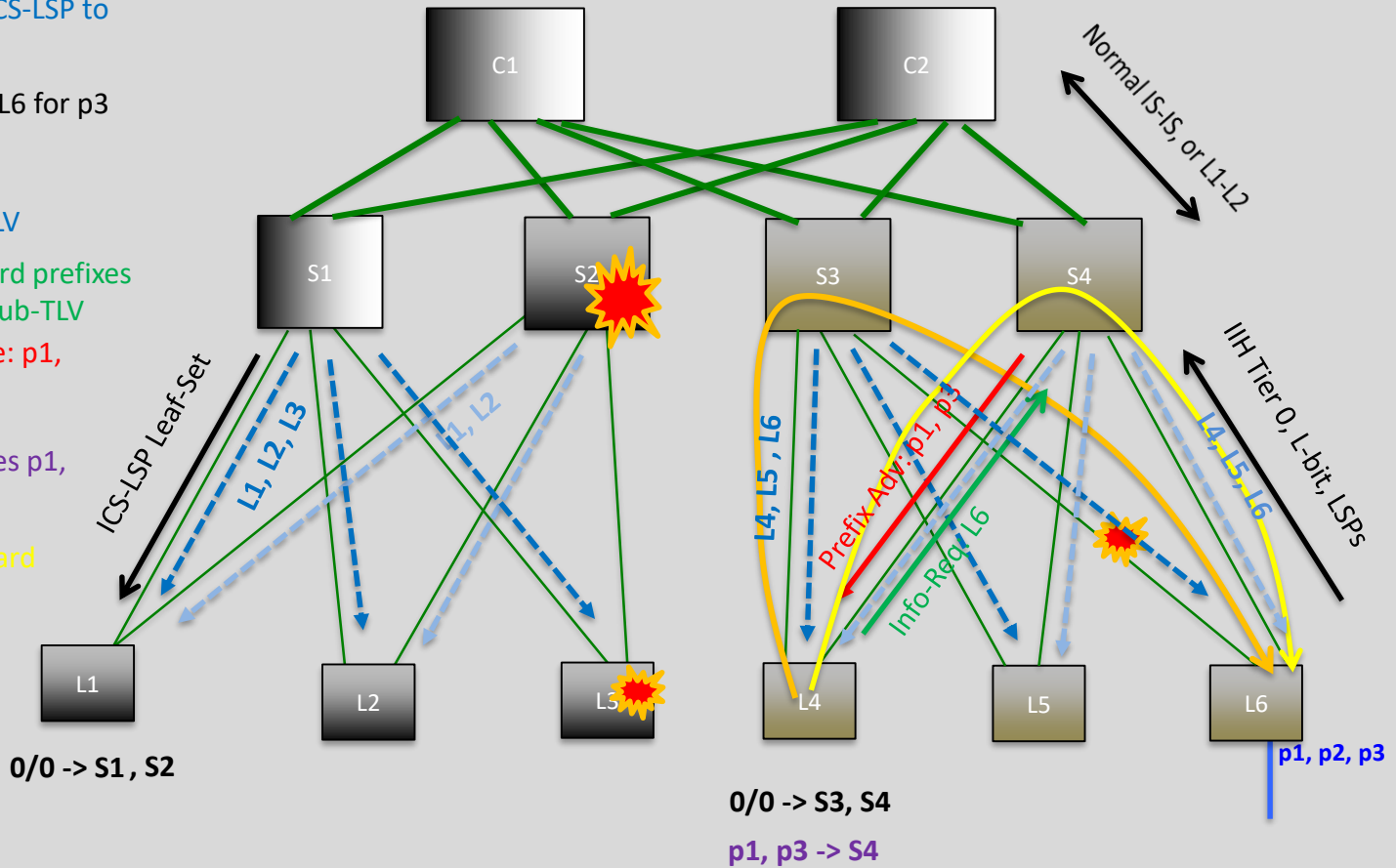


# Multi-Level Spine-Leaf



# Link/Node Down (Tier 0-1)

- S1-S4 include Leaf-Set sub-TLV when sending Spine-Leaf TLV in CS-LSP to leaves
- 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