

draft-li-dynamic-flooding-05

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Changes From Previous Version

- Includes extensions for ISIS, OSPF and OSPFv3
- Two modes of operation
 - Centralized
 - Distributed

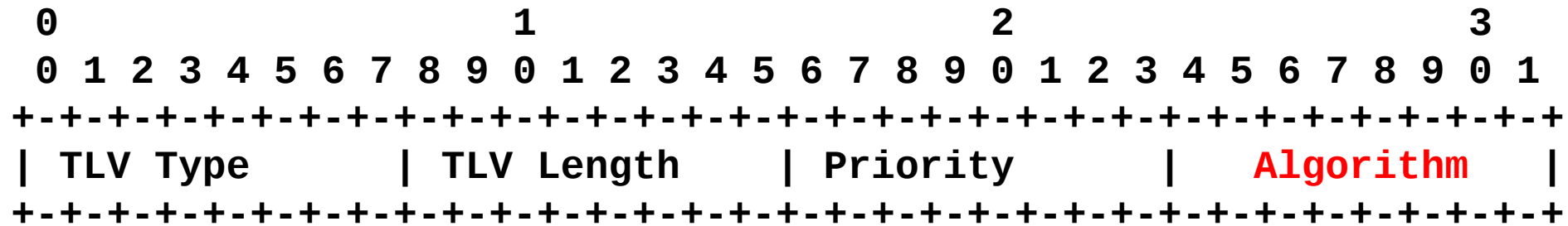
Area Leader

- Centralized mode
 - Responsible for computing and distributing the flooding topology
- Distributed mode
 - The distributed algorithm advertised by the Area Leader **MUST** be used by all routers that participate in Dynamic Flooding
- Not every router needs to be a candidate to become an Area Leader
 - Single candidate is sufficient for correct operation
 - Multiple candidates recommended for redundancy

Computation of Flooding Topology

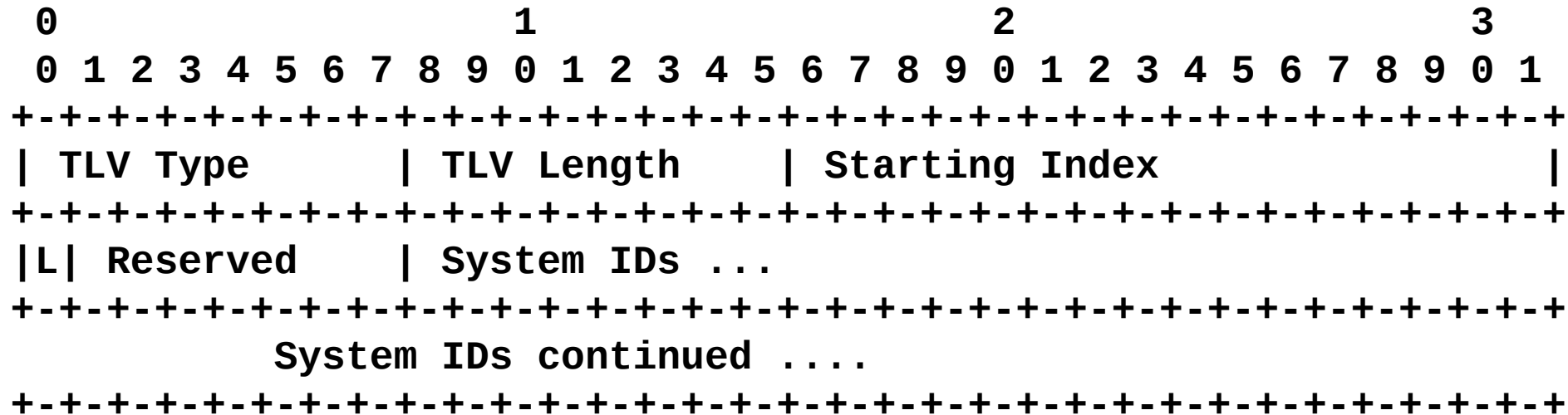
- Centralized mode
 - Exact algorithm does not need to be known and standardized
- Distributed mode
 - All nodes in the IGP area MUST use the same algorithm to compute the flooding topology
 - It is possible to use private algorithms to compute flooding topology, if the all nodes in the area use the same one
 - Responsibility of the operator to make sure that all nodes have a common understanding of what the given algorithm value represents
 - Routers that do not support the value of algorithm advertised by the Area Leader MUST continue to use legacy flooding mechanism.

IS-IS Area Leader Sub-TLV



- Algorithm - a numeric identifier in the range 0-255 that identifies the algorithm used to calculate the flooding topology.
 - 0: Centralized computation by the Area Leader
 - 1-127: Standardized distributed algorithms
 - 128-254: Private distributed algorithms
 - 255: Reserved

IS-IS Area System IDs TLV



- Only used in centralized mode
- “Ending Index” has been removed – was redundant
 - we have the TLV length
- Handling of multiple IS-IS Area System IDs TLVs with the L bit set

Flooding Behavior

- Link state updates received on one link in the flooding topology MUST be flooded on all other links in the flooding topology
- Link state updates received on a link not in the flooding topology MUST be flooded on all links in the flooding topology
- When the flooding topology changes on a node the node MUST continue to flood on the union of the old and new flooding topology for a limited amount of time.
 - Provide all nodes sufficient time to migrate to the new flooding topology
 - Makes sure that the flooded data will be delivered to all nodes at all times

OSPF Extensions

- OSPF Area Leader Sub-TLV
 - Top level TLV of the Router Information LSA
 - Used by both OSPF and OSPFv3
 - Used in both centralized and distributed modes
- OSPFv2 Dynamic Flooding Opaque LSA
 - New OSPFv2 Opaque LSA
 - Only used in Centralized mode
- OSPFv3 Dynamic Flooding LSA
 - New OSPFv3 LSA
 - Only used in centralized mode
- OSPF Area Router IDs TLV, OSPF Flooding Path TLV
 - Top level TLVs of:
 - OSPFv2 Dynamic Flooding Opaque LSA
 - OSPFv3 Dynamic Flooding LSA

Next Steps ...

- WG adoption
- Continue to evolve the draft
- Define a standardized distributed algorithm(s) for computing flooding topology.
 - Ideas are welcomed
- Work on implementation