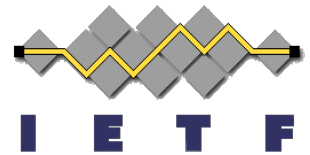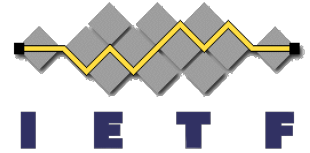# LSR WG Update IETF 112, Virtual

Acee Lindem, Cisco
Chris Hopps, LabN
Yingzhen Qu, Futurewei

Link State Routing (LSR) Working Group Overview

- Merger of former OSPF and IS-IS Working Groups
- IETF home for predominant Internal Gateway Protocols (IGP) standardization including enhancements, protocol maintenance, and YANG models.
- OSPFv2 - Defined in RFC 2328 with support for IPv4
- OSPFv3 – Defined in RFC 5340 with support for both IPv4 and IPv6. Extended LSAs defined in RFC 8362 provide complete extendibility.
- IS-IS – Base protocol standardized in ISO by ISO 10589:2002. IETF support for IPv4 with RFC 1195 and IPv6 with RFC 5308.

Segment Routing – MPLS and SRv6
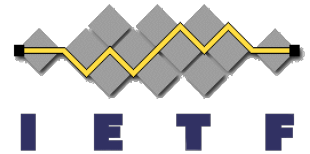
- IGP Signaling for Segment Routing including Node SIDs, Adj-SIDs, and LAN Adj-SIDs as well inter-area and external advertisement

- SR MPLS done with RFC 8665 (OSPF), RFC 8666 (OSPFv3), and RFC RFC 8776 (IS-IS)

- Drafts for SRv6 for IS-IS and OSPFv3.

Flex Algorithm

- Dynamic advertisement of algorithm definitions and advertisement.

- Flexible definition of admin-group constraints.

- Per-prefix algorithm selection with only IGP routers supporting algorithm on forwarding path. Algorithm specific metrics.

- Support for both segment routed paths and native IP paths (separate draft).

- Support for algorithms based on bandwidth constraints. Minimum bandwidth and delay constraints. Automatic metric calculation of metric based on bandwidth.

Flooding Optimizations

- Centralized or distributed calculation of sparse flooding topologies.

- Distributed algorithm based on minimum degree selection of flooding paths.

- Proposals for area abstraction to limit amount of information flooded globally – IS-IS TTZ and IS-IS Area Proxy.

- IS-IS Flood Reflection – "Roughly" Applies principles of BGP Route Reflector to IS-IS

- IS-IS Flooding Speed Optimization – Overcome flooding limit of ISO specifications without dropping LSPs due to congestion.
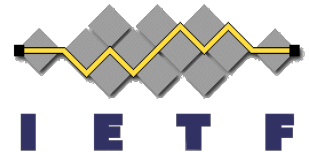
Protocol Maintenance

- IS-IS Support for additional hierarchy through additional levels.

- OSPF support for routing/non-routing information using a separate instance allowing for remote neighbors and sparse topologies.

- Requests to advertise additional information in IGPs
  - Node attributes – Router Information Extensions
  - Link Attributes – Application specific (RFC 8919 and RFC 8920) and non-application specific attributes
  - Prefix Attributes

- BIS documents improving the original versions

YANG Models

- Base OSPF and IS-IS YANG models are nearing publication.

- SR MPLS Augmentations

- SRv6 Augmentations

- Dynamic Flooding Augmentations

- Augments for draft that didn't make the base models.