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IDR Working Group

draft-hegdearavind-idr-bgp-ls-flex-algo-ext-00

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Problem Statement

- Flexible Algorithm enables operators to setup IGPs to perform constrained based topology computation
- Each Flex-Algo can be defined by
 - The type of calculation to be used (e.g. shortest path or strict SPF)
 - The metric type to be used (e.g. IGP metric, delay, TE metric)
 - The set of constraints to be applied (e.g. extended admin group/affinities)
- PCE/controller learns IGP topology from multiple domains and computes end to end SR Policies
- The advertisement of IGP flex-algo definition via BGP-LS enables PCE/controller to map the intent of the SR Policies to Flex-Algo
- BGP-LS Extensions for Flexible Algorithm Advertisement is defined in RFC 9351

What does this draft propose?

- Adds new BGP-LS Extensions for Flexible Algorithm Advertisements
- Covers for both IS-IS and OSPF
- To be used with regular IPv4 and IPv6 forwarding
 - As defined in RFC 9502 [IGP Flexible Algorithm in IP Networks]
 - IP Algorithm TLV under BGP-LS Node Attribute TLV
 - Advertises algorithms associated with a given node
 - IP Algorithm Prefix Reachability TLV under BGP-LS IPv4/IPv6 Prefix Attribute TLV
 - Advertises algorithm-specific prefix reachability from a given node

What does this draft propose? (cont.)

- To exclude based on bandwidth and metric constraints and to automatically calculate metrics for use in SPF calculation
 - As specified in draft-ietf-lsr-flex-algo-bw-con-15
 - Generic Metric TLV under BGP-LS Link Attribute TLV
 - Advertises the generic metric(s) associated with a link
 - Sub-TLVs under FAD TLV which are part of BGP-LS Node Attribute TLV
 - FAD Exclude Minimum Bandwidth
 - Advertises Minimum Bandwidth associated with the FAD
 - FAD Exclude Maximum Link Delay
 - Advertises Maximum Link Delay associated with the FAD
 - FAD Reference Bandwidth
 - Advertises information needed for the reference bandwidth method of metric calculation associated with the FAD
 - FAD Bandwidth Thresholds
 - Advertises information needed for bandwidth threshold method of metric calculation associated with the FAD

What does this draft propose? (cont.)

- To include/exclude links in the reverse direction of the traffic flow for SPF calculation
 - As specified in draft-ietf-lsr-igp-flex-algo-reverse-affinity-03
 - Advertise rules that are used during the Flex-Algorithm path calculation in the reverse path
 - Sub-TLVs under FAD TLV which are part of BGP-LS Node Attribute TLV
 - Flexible Algorithm Exclude-Any Reverse Affinity
 - Flexible Algorithm Include-Any Reverse Affinity
 - Flexible Algorithm Include-All Reverse Affinity

Next Steps

- Requesting WG review and any inputs/feedback
- Since these are straightforward extensions from IGP to BGP-LS, requesting WG adoption