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draft-ietf-lsr-flex-algo-00

• LSR WG document
• Replaced:
  • draft-hegdeppsenak-isis-sr-flex-algo
  • draft-ppsenak-ospf-sr-flex-algo
• Early IANA allocations has been made:
  • FAD Sub-TLV:
    • Sub-TLVs for TLV 242 (IS-IS Router CAPABILITY TLV)
    • OSPF Router Information (RI) TLVs
Changes From Previous Version

• Includes extensions for ISIS, OSPF and OSPFv3

• Usage not restricted to SR
  • Allows Flex-Algo to be used by any application
  • Application specific handling needs to be defined for each application
  • This draft only defines the SR application handling

• Lots of editorial improvements
  • Terminology section has been added
  • Document has been restructured with several new sub-sections added
  • Improved readability

• Thanks to Eric Rosen and Tony P. for their excellent comments
FAD Sub-TLV

• FAD Sub-TLV
  • Algorithm -> Flex-Algorithm
    • value between 128 and 255 inclusive from "IGP Algorithm Types" registry
    • numeric identifier that represents the combination of
      {calculation-type, metric-type, set of constraints}
  • Alg. Type -> Calc-Type
    • value from 0 to 127 inclusive from the “IGP Algorithm Types” registry
    • only “calculation-type” defined for the specified IGP Algorithm is used
FAD Handling

• Handling of Flexible Algorithm Definition TLV:

If a node is configured to participate in a particular Flexible-Algorithm, but the selected Flex-Algorithm definition includes calculation-type, metric-type or constraint that is not supported by the node, it MUST stop participating in such Flexible-Algorithm. That implies that it MUST NOT announce participation for such Flexible-Algorithm and it MUST remove any forwarding state associated with it.
Flex-Algo Node Participation

• Advertisement of node participation in any particular Flex-Algorithm MUST be done on a per application basis
  • Application specific forwarding MUST be supported if the node participates

• Advertisement of node participation for Segment Routing
  • Topology independent – defined in SR IGP extensions
  • Participation in an SR-Algorithm applies to all topologies in which the advertising node participates

• Advertisement of node participation for other applications
  • MAY be topology specific or MAY be topology independent depending on the application itself
  • Application specific advertisement for Flex-Algo participation MUST be defined for each application (outside of this draft)
Flex-Algo Calculation

• Calculation of the paths for any particular Flex-Algorithm MUST be application specific
  • It MUST take the application specific node participation into consideration

• Handling of nodes that do not participate in Flexible-Algorithm is application specific
  • MPLS Segment Routing: only considers participating nodes
  • Other applications: MUST define their behavior (outside of this draft)
Flex-Algo Forwarding

• Application specific forwarding plane

• Segment Routing MPLS forwarding for Flex-Algo
  • Flex-Algo Specific Prefix-SIDs MUST be used
  • If Flex-Algo specific Prefix-SID is not available forwarding entry MUST not be present
  • Traffic that is supposed to be routed via Flex-Algo path MUST be dropped if no Flex-algo path is available

• Other Applications' Forwarding for Flex-Algo
  • Application specific forwarding for Flex-Algo MUST be defined
  • Outside of this draft
Next Steps ...

• Feedback from the WG
• Continue to evolve the draft
• Implementations - some are available