Circuit-style Segment Routing Policies


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Motivation

• Allow a single network to carry both
  • L2/IP/VPN connection-less services
  • Connection-oriented p2p transport services (aka private lines)

• Address the following requirements
  • Persistent traffic engineered paths
  • Strict bandwidth commitment
  • End2end path protection (incl. <50msec) and restoration
  • Path OAM
Circuit-style SR Policy Characteristics

- Bandwidth requested and reserved
- Bi-directional, co-routed paths by associating the SR policy from A to Z and Z to A
- Segment lists have strict hops of unprotected adj-SIDs
- No path reoptimization unless manually requested
- Multiple candidate paths for path protection and restoration
- STAMP loopback mode liveness and performance measurement
Circuit-style SR Policy Creation

• Network Topology
  • Unprotected adj-SIDs allocated persistently
    • IGP and BGP-LS extensions for topology info distribution
  • Bandwidth available for CS-SR per link

• PCC delegates SR policy candidate path computation to PCE
  • BANDWIDTH object (operational & requested bandwidth)
  • LSPA object (enforce no local protection via L=0 E=1)
  • Bidirectional association (co-routing via C=1) \(^1\)
  • SR policy association in case of multiple candidate paths \(^2\)
  • Disjointness association for 1:1 protection \(^3\)
  • Request strict hops and no-reoptimization \(^4\)

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1) draft-ietf-pce-sr-bidir-path
2) draft-pce-segment-routing-policy-cp
3) RFC8800
4) draft-sidor-pce-circuit-style-pcep-extensions
Recovery Schemes

Candidate-path preferences: P1 > P2 > P3

-established
-red established, failed
--on-demand

Candidate-path state indication via O flag in LSP object
O=2 active, O=1 up, O=0 down

unprotected

1:1 protection

1+R restoration

1:1+R protection
Next Steps

• Appreciate your comments and discussion