PCEP Extension for Stateful Inter-Domain Tunnels

Olivier Dugeon & Julien Meuric (Orange Labs)
Y. Lee (Huawei Technologies)
D. Ceccarelli (Ericsson)
draft-dugeon-pce-stateful-interdomain-02
Update since previous versions

• Version 00 & 01:
  • Merge draft draft-lee-pce-lsp-stitching-hpce to add Hierarchical method
  • Clarify Border node notation

• Version 02:
  • Correct and precise some steps and exchange in section 3
    • E.g. the ERO convey in the PCInitiate message is now only composed by the PKS to simplify the message parsing
  • Add a new section to request a new Inter-domain association ID (within the Association Object)
    • This is to help the management of the association of local and end-to-end part of the tunnels in case of failure.
  • Rewrite section 6, clarifying Segment Routing part and how PCE choose between RSVP-TE and Segment Routing to enforce its local part of the end-to-end tunnel
  • Correct typos and clarify acronyms in various place
Hot Topic

• Data Centre interconnection use case is highlight in portfolio of Vendors and requested by Operators

• Several drafts ask for a label to stitch, nest, bind ... tunnels
  • E.g. draft-sivabalan-pce-binding-label-sid

• BGP-LU could be a challenger

• But none of the mentioned solutions provide a mechanism to exchange stitching label nor provide Traffic Engineering support
Technical solution

• Choose to request code points in existing PCEP Objects
  • Path Setup Type: 3 new code points
    • Inter-domain, RSVP-TE Inter-domain & SR-Inter-domain
  • Association Group: 1 new code point
    • Inter-domain association group
  • Error: 2 new error values
    • Missing Label in RRO & Inter-domain association group error

• But Could be applicable with a new PCEP Object
  • Need more modification in protocol stack
  • Open to discussion on the mailing list
1\textsuperscript{st} Implementation based on ODL

- Draft fully implemented on ODL
  - BGPCEP project enhanced with BRPC, stateful BRPC and Stitching Label
  - Demo available here: https://www.youtube.com/watch?v=ipVPh2q27Ts
  - Prototype feedback has been used to release version 02 of the draft
Conclusion

• Propose to extend PST and Association Group to inter-domain
  • To exchange Stitching Label between PCEs and PCE / PCCs
  • To automatically stitch / nest local LSP tunnel to form inter-domain LSP tunnel

• Applicability
  • Inter-domain LSP tunnels setup by RSVP-TE and/or Segment Routing
  • Allow stitching of Segment Routing paths and RSVP-TE LSP tunnels
  • Targeted use case: inter-domain VPN, Data Centre interconnection ...

• Request PCE WG to adopt this draft as WG draft