PCE-initiated IP Tunnel

draft-chen-pce-pce-initiated-ip-tunnel-00

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Introduction

- This document specifies a set of extensions to PCEP to support PCE-initiated IP Tunnel to satisfy the requirement which is introduced in draft-li-spring-tunnel-segment-00.

Requirement

- draft-li-spring-tunnel-segment-00 introduces a new type of segment, Tunnel Segment, for the segment routing.
- Tunnel segment can be used to reduce SID stack depth of SR path, span the non-SR domain or provide differentiated services.
- The tunnel segment can be allocated for
  - MPLS RSVP-TE tunnel
  - SR-TE tunnel
  - IP Tunnel.
- Two ways to set up the tunnel:
  - configure tunnel on the device
  - PCE-initiated tunnel.

Overview of Procedures

- Capability advertisement
  - PCE Initiated Tunnel Capability for specific tunnel types.
- Set up, maintain and tear down PCE-initiated IP Tunnels
- Not include tunnel state synchronization, PCC local policy and timeout process, the session failure process, etc.

PCEP Messages

- Open Message
  - To negotiate the PCE Initiated Tunnel Capability for tunnel types according to PCE-INITIATE-TUNNEL-CAPABILITY TLV

PCEP Messages

- PCTunnelInitiate Message
  - To instantiate or remove a tunnel, a PCE sends a PCTunnelInitiate message to a PCC.
- PCTunnelUpd Message
  - To modify the parameters of a tunnel, a PCE sends a PCTunnelUpd message to a PCC.
- PCTunnelRpt Message
  - To report the state of a tunnel, a PCC sends a PCTunnelRpt message to a PCE.
- Message comprise:
  - SRP Object
  - TUNNEL Object

PCEP Objects

- SRP Object
  - defined in [I-D.ietf-pce-stateful-pce]
  - used to correlate PCTunnelInitiate and PCTunnelRpt or PCErr message
  - Value of 'R' Flag means instantiation or deletion

PCEP Objects

- TUNNEL Object
  - Tunnel Identifier TLV
    - contains the source address, destination address, tunnel type, tunnel ID.
  - Tunnel Name TLV
  - Tunnel Parameter TLV
    - specifies information needed to construct the encapsulation header when sending packets through that tunnel.
  - Tunnel Attribute TLV
    - specifies some of the information of the tunnel such as metric or TE metric which are carried in sub-TLVs.

Next Steps

- Solicit comments.
- Revise the draft.
- Step by step supplement and improve other process such as tunnel state synchronization, PCC local policy and timeout process, the session failure process.