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PCEP Operational Clarification

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Purpose

- Clarify stateful PCEP behavior that would leave less room for misinterpretation.

- Document areas where vendors had to resolve issues to make public interop events successful.

Overview

- We clarify the meaning of "state" in "stateful PCEP".

- LSP state is stored in LSP-DB and Association state in ASSO-DB.
  - Fully compatible with RFC 8231.
  - Each DB has identical structure on the PCC and PCE.

- We update RFC 8231 by saying that PCReq is **NOT** mandatory for the PCC to send, thus simplifying LSP bring-up.

LSP-DB

- PCC LSP-DB is modified by the PCC when it chooses to signal a new path.

- PCE LSP-DB is ONLY modified by PCRpt.

- 2-Tier structure: Tunnel is a container for LSPs.

- Tunnel is identified by PLSP-ID/SYMBOLIC-NAME.

- LSP is identified by LSP-IDENTIFIERS.

Note: The choice of wording "Tunnel" and "LSP" is up for discussion. "LSP" stands for "**Label** Switched Path", but this draft applies to non-labeled protocols, like SRv6. Perhaps "PATH-DB" would be a better choice for a name?

ASSO-DB

- ASSO-DB can be updated from PCC or from PCE, using any stateful message or using configuration.

- Each ASSO is a container for LSPs (**not Tunnels**).
  - If we try to make ASSO a container for Tunnels, then it would not be possible to switch to a different ASSO using make-before-break, see Section 4.2.
  - In the same Tunnel, two LSPs can be in different ASSOs during make-before-break.

PCReq in stateful PCEP

- RFC 8231 states that PCC MUST send PCReq before sending PCRpt.

- PCE cannot enforce this, because PCE is not supposed to create any state from PCReq, so it cannot know if a given Tunnel has sent PCReq before.

- It was found that many vendors skip this step.

- We modify RFC 8231 to make the PCReq **optional** in stateful PCEP.

This reduces the number of PCEP messages exchanged and simplifies PCEP implementation.