State Synchronization Between Stateful PCE

draft-litkowski-pce-state-sync-02

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Introduction

- Procedure for Inter-Stateful PCE communications
  - Making PCE deployments more resilient
  - Solve computation loop/optimality issues for dependent path computations (for e.g. diversity)

- Work for all PCE-PCE relationships
  - Redundant PCEs (backup or load-balance)
  - Inter-domain PCEs
  - Hierarchy of PCEs
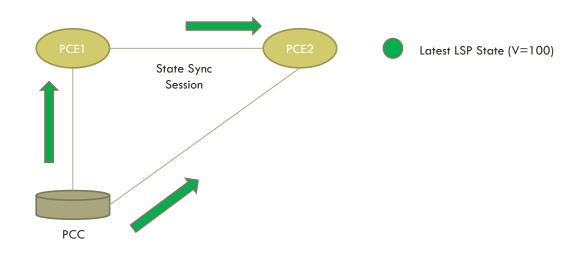
- Discussed previously in IETF 98 & 97

Introduction

- Generic procedures for the stateful inter-PCE communication
  - A state-sync PCEP session between Stateful PCEs
  - Bi-directional state synchronization between stateful PCEs
  - Master-Slave relationship between PCEs for a group of LSPs
    - PCE election based on priority (how the priority is set/advertised is out of scope)
  - A set of forwarding rules of LSP state
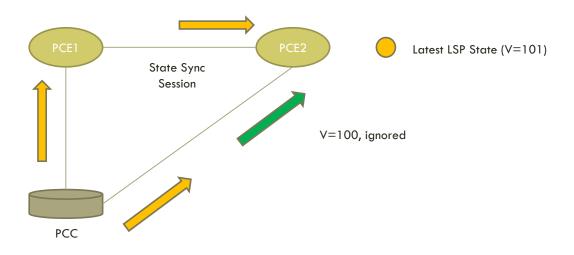 - Sub-delegation procedures

Updates in -02

- How to make sure the "latest" state is synchronized at PCEs in case of learning LSP state from multiple sources?
  - A single "freshest" state for the LSP should be kept (with a list of all sources)

- Use the LSP-DB version number (similar to RFC8232 - state synchronization optimizations)
  - ORIGINAL-LSP-DB-VERSION TLV – which encodes the PCC's LSP-DB version number (as received from PCC) on the state-sync PCE sessions
  - LSP-DB-VERSION TLV is still used with local PCE's Database version to support state optimization techniques
  - A PCE updates the LSP state only if the ORIGINAL-LSP-DB-VERSION present in the PCRpt is greater than the current ORIGINAL-LSP-DB-VERSION of the stored LSP state.
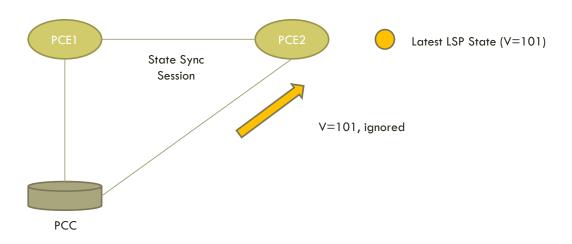   - This ensures that a PCE never tries to update its stored LSP state with an old information.

Updates in -02: Latest State!

PCE1

PCE2

State Sync
Session

PCC

Latest LSP State (V=100)

Updates in -02: Latest State!

PCE1 → PCE2

State Sync
Session

● Latest LSP State (V=101)

V=100, ignored

PCC

Updates in -02: Latest State!

PCE1 — State Sync Session — PCE2

🟠 Latest LSP State (V=101)

V=101, ignored

PCC

Next Steps

- Procedures for the PCE-Initiated LSP need to explicitly stated in the draft.
  - Most of the procedure remains same as a delegated LSP

- Issue WG adoption call for the Document.
  - Problem is worth working on?
  - The document is a good foundation.

THANK YOU