

LSP Synchronization for Stateful PCE

PCE WG, IETF 87th, Berlin, Germany

(1) draft-zhx-pce-stateful-lsp-sync-00.txt

(2) draft-palle-pce-stateful-pce-lspdb-sync-00.txt

(1) draft-zhx-pce-stateful-lsp-sync-00.txt

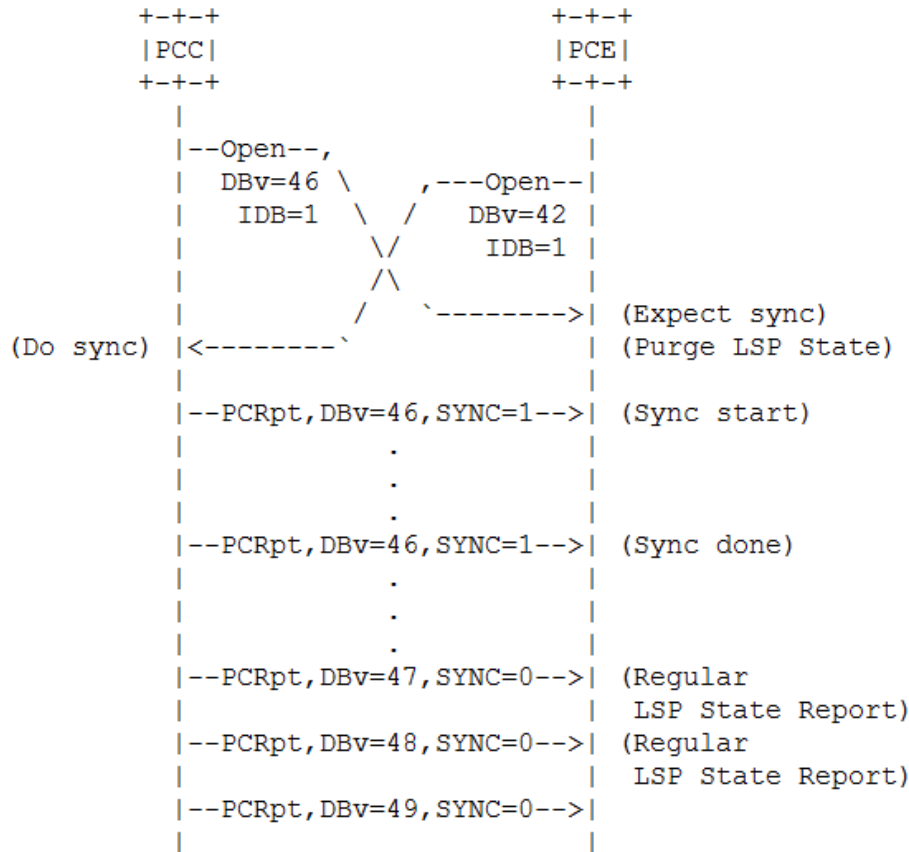
Xian Zhang (zhang.xian@huawei.com)

Gang Xie (xiegang09@huawei.com)

Dhruv Dhody(dhruv.dhody@huawei.com)

Introduction and Motivation

Current method: **only** allow PCC-initiated **FULL** LSP state sync.



Potential issues?

- If PCE connects to the network through a common gateway network node, PCC-initiated LSP sync. can cause potential bottleneck. 😞
- Given small number of LSP state change during PCEP session down, full LSP state sync. can result in unnecessary communication overhead, overloading PCE, plus long sync. time. 😞

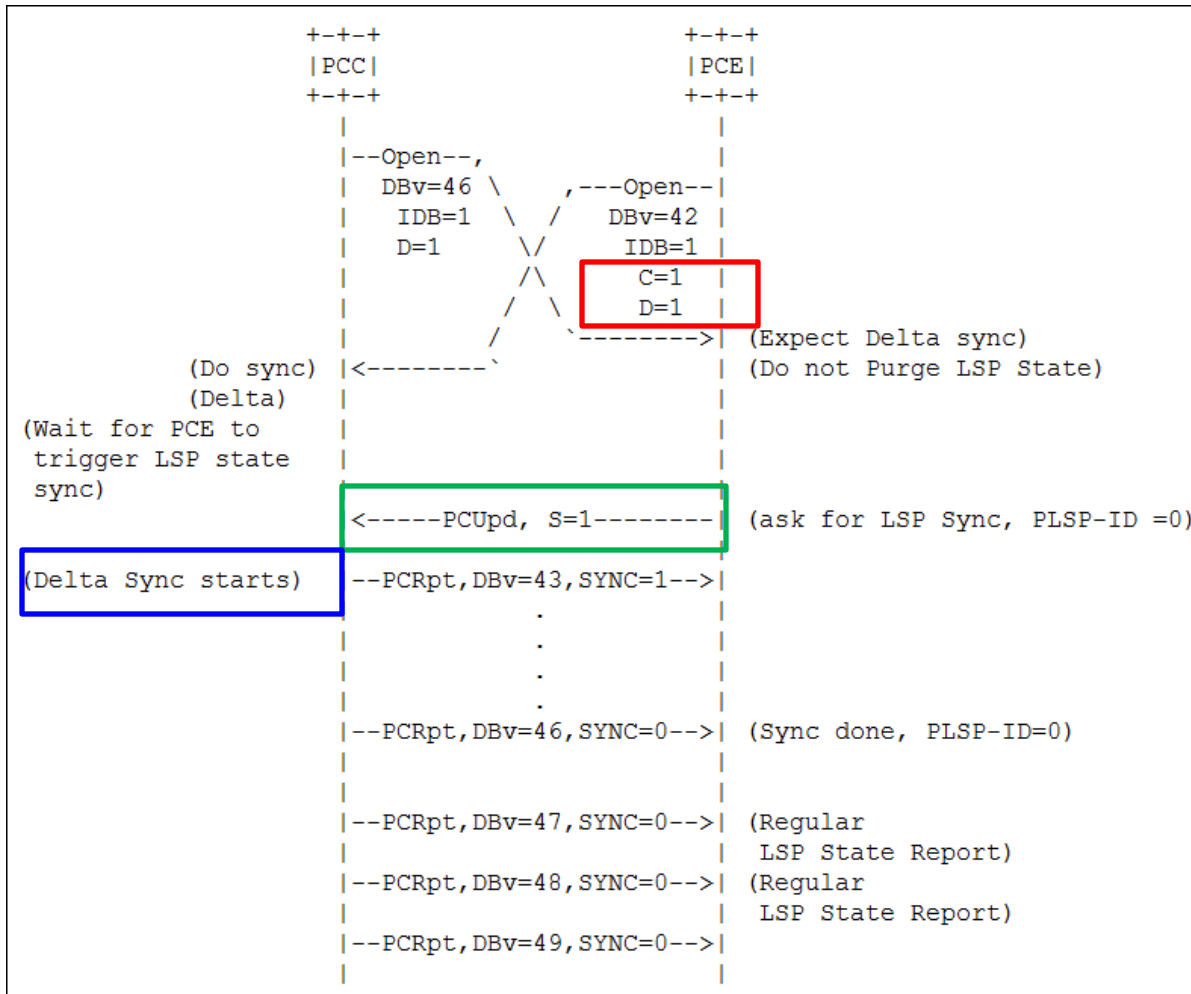
PCEP Requirements

To address the issues, **additional** requirements are suggested to PCEP extensions for stateful PCEs.

PCEP extensions allow:

- ✓ **Incremental** LSP state synchronization between session restarts;
- ✓ A stateful **PCE** to **control the timing** of PCC synchronizing its LSP state with the PCE during **initial state sync**.

Proposed Method and Extensions



New extensions:

C bit – PCE wants control?

D bit – incremental update?

DB Version:

- Used to determine the minimum/ 'delta'.
- Takes care of deleted LSP.

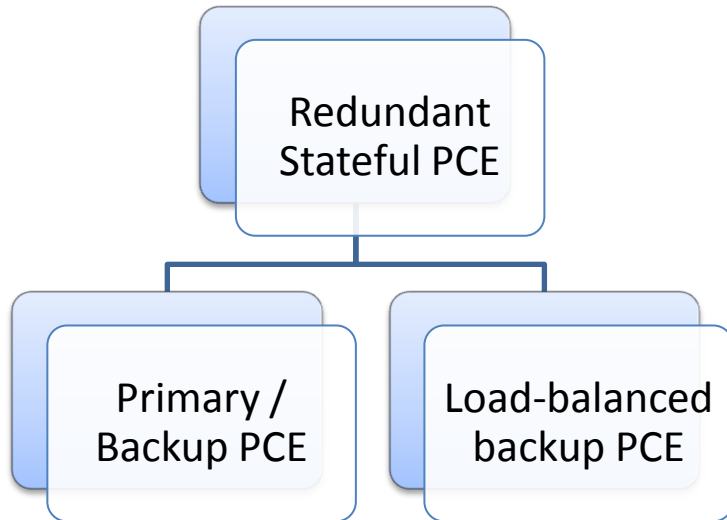
(2)draft-palle-pce-stateful-pce- lspdb-sync-00.txt

Udayasree Palle (udayasree.palle@huawei.com)

Dhruv Dhody(dhruv.dhody@huawei.com)

Xian Zhang (zhang.xian@huawei.com)

Introduction and Motivation



A backup PCE exists to perform functions only in the event of primary PCE failure .

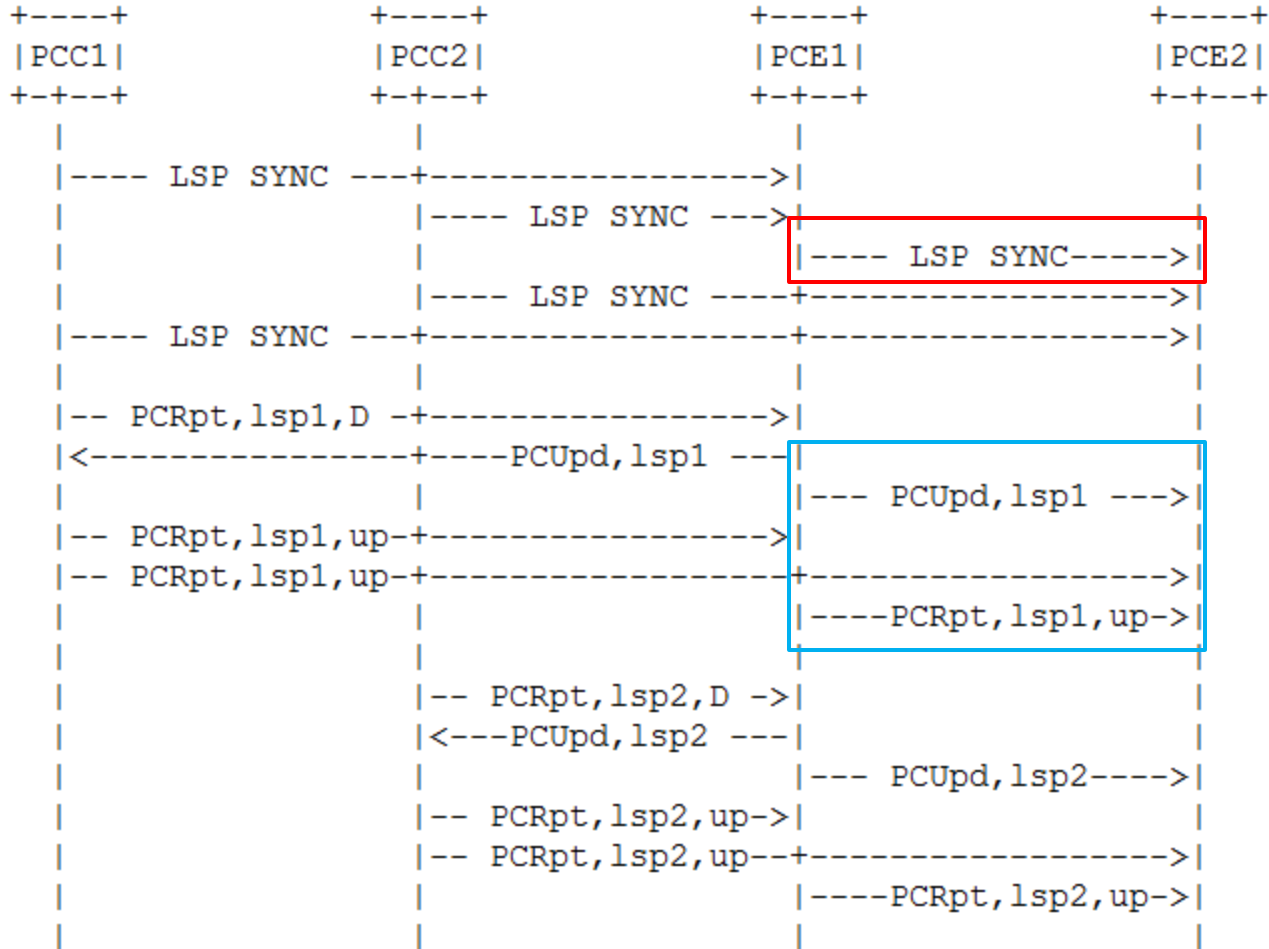
Load-balanced PCEs share the load all the time and act as backup to each other.

Current methods focus mainly on 'PCC to PCE' LSP DB state sync.

Need for PCE to PCE sync.

- LSP-DB must be kept synchronized for Redundant Stateful PCE
 - ✓ PCEs may sync from the network independently (via multiple PCCs) – **easy to lead to synchronization issues!**
- PCE needs to sync its LSP-DB with that of another PCE
 - ✓ Sync pending LSP changes and sticky resources
 - ✓ More details in [ietf-pce-questions]

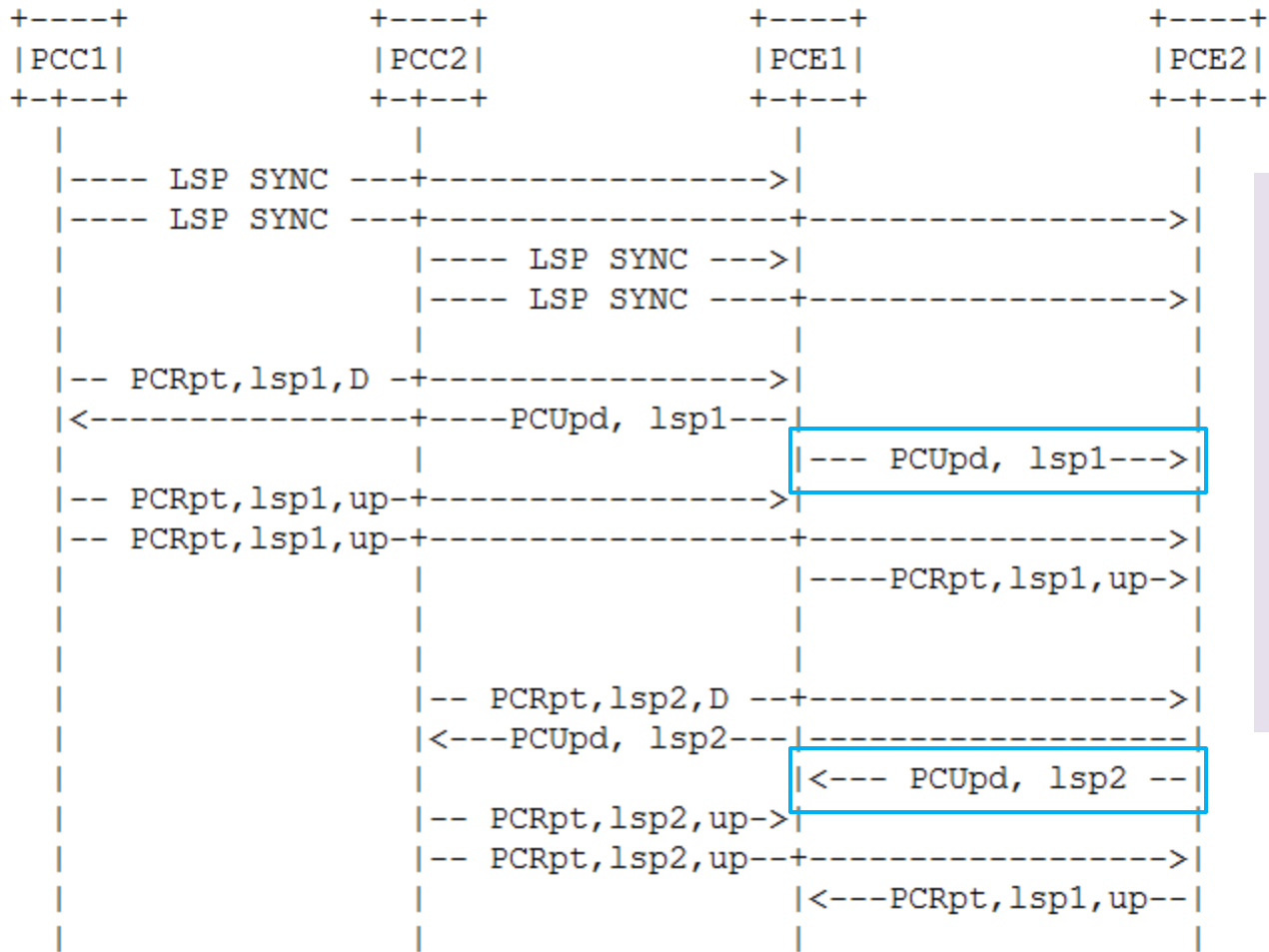
Primary and Backup Stateful PCEs



- Backup PCE gets sync from Primary PCE
 - ✓ Initial state synchronization
 - ✓ Pending / sticky resources backed up immediately

- Backup PCE MAY learn from network as well
 - ✓ Act as a cross-check mechanism

Load-Balanced Stateful PCEs



- Load-balanced PCE gets synchronized from the network (PCC) independently.
- ✓ But Pending / sticky resources backed up immediately

Summary

Draft-ietf-pce-stateful-pce

- Full State sync between PCC to PCE.
- PCE triggered full state re-sync.

draft-zhx-*-lsp-sync

- Incremental sync between PCC to PCE.
- PCE control timing during initial state sync as well.

draft-palle-*-lspdb-sync

- LSP state sync between redundant stateful PCEs
- Primary-Backup and Load-balanced PCEs

Next Step

- WG adoption on <draft-zhx-*-lsp-sync>?
- Any comments on <draft-palle-*-lspdb-sync>?