Extensions to Path Computation Element Protocol (PCEP) to Support Resource Sharing-based Path Computation

PCE WG, IETF 89th, London, UK

draft-zhang-pce-resource-sharing-00.txt

Xian Zhang (zhang.xian@huawei.com)
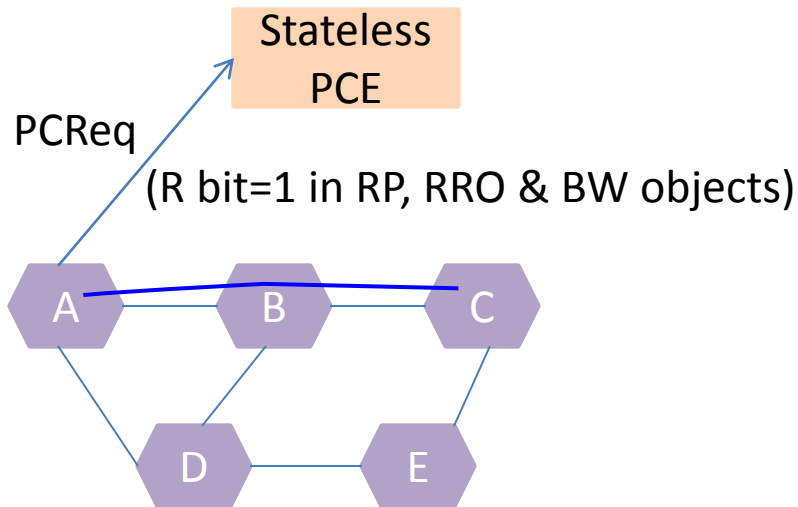
Haomian Zheng(zhenghaomian@huawei.com)

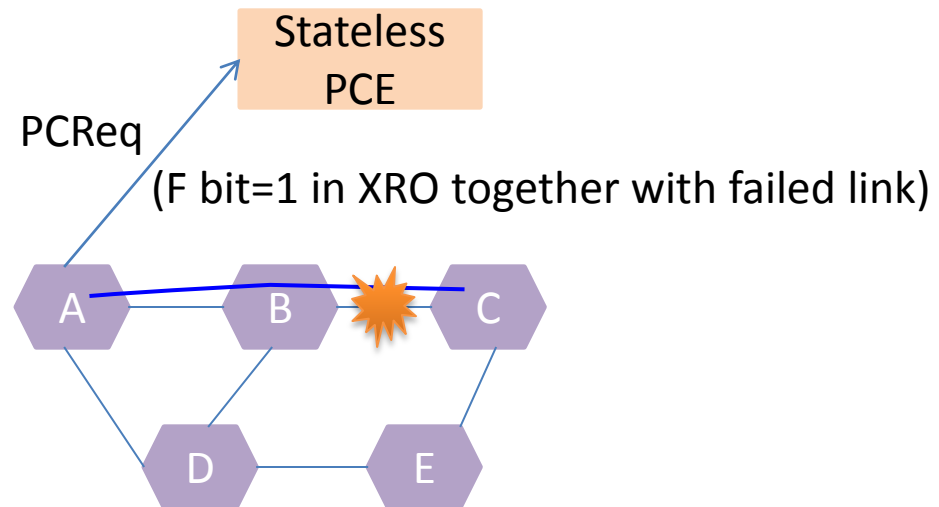Oscar Gonzales de Dios (ogondio@tid.es)

Victor Lopez(vlopez@tid.es)

Problem Statement

Problem: how PCE can support resource sharing based path computation?

✓Purpose: to increase resource usage efficiency

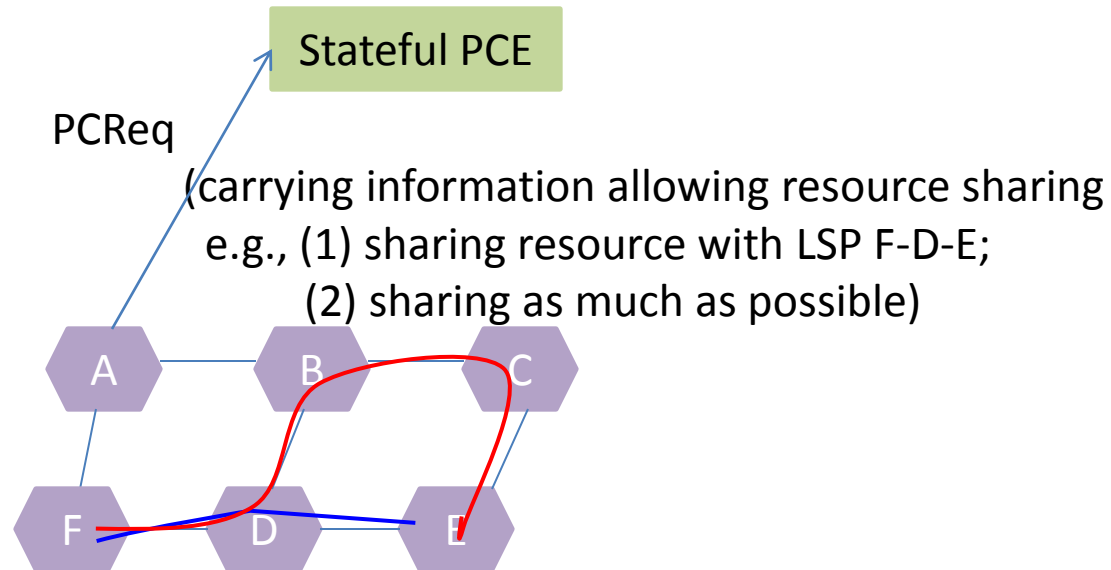|	
Stateless PCE	Stateless PCE
PCReq	PCReq
(R bit=1 in RP, RRO & BW objects)	(F bit=1 in XRO together with failed link)
(1) For re-optimization (RFC5540)	(2) For dynamic rerouting (RFC5521)

Issues with Current Solutions

- ✓ Do not work when resource sharing is carried out for two LSPs does not sharing common end points;

    - How to convey the LSP info.;

- ✓ Do not support specifying resource sharing strategy(i.e.,);

    - What is the rule for resource sharing?

- ✓ Changes incurred due to stateful PCE standardization need to be considered.

    - Knowledge of LSP-DB.

Example and Requirement

Stateful PCE

PCReq

(carrying information allowing resource sharing
e.g., (1) sharing resource with LSP F-D-E;
(2) sharing as much as possible)

A — B — C

F — D — E

Information needed:
- To which the LSP is sharing resource with?
- Any resource sharing strategy?

Proposed Extensions

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
| RSO codes                    |R|D|          Reserved           |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                                                               |
~                     Optional TLVs                             ~
|                                                               |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
              Figure 1: RSO Object Format
```
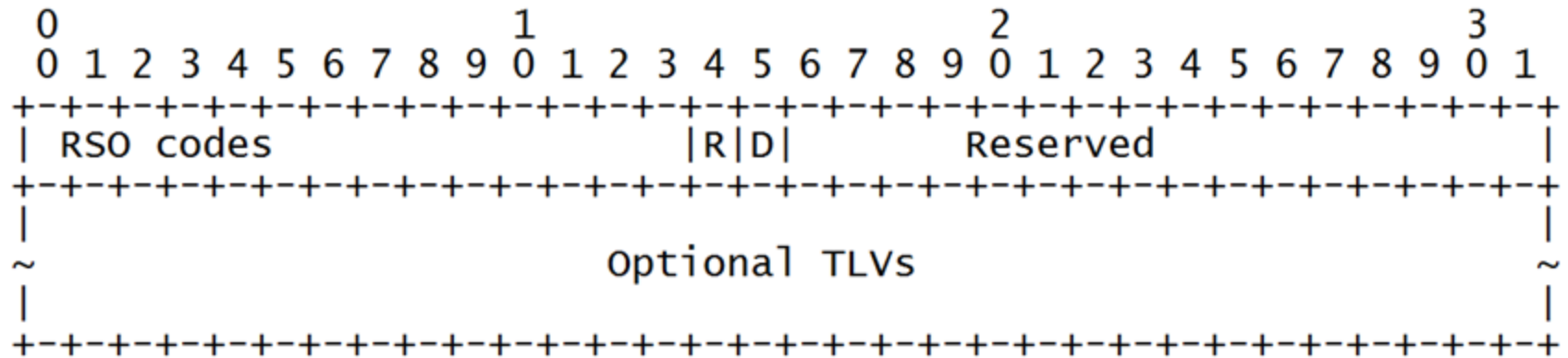
- A new object (Resource Sharing Object, RSO) is defined to accommodate the previous mentioned requirement.
- The two pieces of information is included
  - Current only 5-tuple TLV is defined to identify a LSP;
    - Will use PLSP-ID defined in the stateful PCE base draft;
  - Two sharing flags are defined
    - R: sharing as much as possible;
    - D: sharing as little as possible ;

Discussion and Next Step

- Comments?
  - Any suggestion to the solution?
- Will revise according to WG feedback.