Local Protection Enforcement in PCEP

draft-stone-pce-local-protection-enforcement

IETF 108 - Online

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Changes since IETF 106

draft-stone-pce-local-protection-enforcement-02
• 2 new co-authors
• Draft renamed from ‘path’ to ‘local’
• Added more text for various use cases and comparison between them
• Added text discussing use cases where there is no preference / “do not care”
• Implementations

Changes not yet posted
• Formatting nits
• Change recommended bit to <TBD> until IANA allocation
Use case

Influence path computation for expanded use cases

- Segment IDs (ADJ-SIDs specifically) may be protected.
- The protection status is advertised in IGP extensions with the B-Flag.
- The selection of a SID has implications during failure scenarios.
- A PCE can consider this backup flag:
  1. A constraint per path calculation to influence shortest path
  2. Deterministic selection of a SID along a shortest path when multiple options are available

Improve interoperability

- Existing implementations have interpreted ‘Local Protection Desired’ (L-Bit) differently (hard vs soft constraint)
- Experienced at EANTC interop testing and Service Provider trials
Use case

- **LSP 1**: must have a protected path
  - Feasible Result:
    - Path (100, 400); Cost 20

- **LSP 2**: must not have a protected path
  - Feasible result:
    - Path (300, 500); Cost 30

- **LSP 3**: no enforcement, but deterministic SID selection
  - Feasible result:
    - Path (100, 400); Cost 20
    - Path (200, 400); Cost 20
    - Path (300, 500); Cost 30
  - Shortest path:
    - Protection Preferred: Path (100, 400); Cost 20
    - Unprotected Preferred: Path (200, 400); Cost 20

### Network Diagram

#### LFA Links/Paths not shown

<table>
<thead>
<tr>
<th>ADJ-SID</th>
<th>B-Flag</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>True</td>
</tr>
<tr>
<td>200</td>
<td>False</td>
</tr>
<tr>
<td>300</td>
<td>False</td>
</tr>
<tr>
<td>400</td>
<td>True</td>
</tr>
<tr>
<td>500</td>
<td>False</td>
</tr>
</tbody>
</table>
Proposal

1. Wording and statements around the usage of existing Local Protection Desired Bit, while attempting to be *generally* backwards compatible with existing PCC and PCE implementations

2. New Flag: Enforcement (E-Flag) to accompany the L-Flag in the LSP Attributes object
Implementation Status

**Nokia (demo)**
- PCC: SROS
- PCE: Network Services Platform (NSP)

**Cisco (demo)**
- PCC: IOS-XR 7.4.1
- PCE: IOS-XR 7.4.1
Next step

1. Requesting working group adoption

2. Requesting early IANA code points so that implementations may proceed further

Thank you