Supporting explicit inclusion or exclusion of abstract nodes for a subset of P2MP destinations in Path Computation Element Communication Protocol (PCEP).

draft-dhody-pce-pcep-p2mp-per-destination-03

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85th IETF @ Atlanta
Updates

Removed the word explicit-path

- As conflicting use in RSVP
- Instead - explicit inclusion or exclusion of abstract nodes

Added clarifying text behind the motivation for this work

Simplified the encoding of P2MP Path request

- Inclusion or exclusion applied to all destinations in one ENDPOINTS object.
- Section on ordering removed (as a result of simplified encoding).

Security, IANA & Manageability Consideration

Other editorial changes!
Motivation

P2MP Inter-domain Core-tree procedure ([draft-ietf-pce-pcep-inter-domain-p2mp-procedures])

Assumption that the sequence of domains for a path (the path domain tree) will be known in advance.

For a group of destination which belong to a destination domain, the domain-sequence needs to be encoded separately.

The mechanism of explicitly specifying abstract nodes for inclusion or exclusion for a subset of destinations can be used for this purpose. (Here abstract nodes are domains)

<table>
<thead>
<tr>
<th>Destination</th>
<th>Domain-Sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>X &amp; Y</td>
<td>D1 – D3 – D4 – D6</td>
</tr>
<tr>
<td>Z</td>
<td>D1 – D3 – D4 – D5</td>
</tr>
</tbody>
</table>
Motivation

<table>
<thead>
<tr>
<th>ENDPOINTS Type</th>
<th>BNC Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>• New leaves to add</td>
<td>• mechanism to specify branch nodes that can or cannot be used via Branch Node Capability (BNC) object</td>
</tr>
<tr>
<td>• Old leaves to remove</td>
<td>• Format same as IRO but only support IP Prefix subobject</td>
</tr>
<tr>
<td>• Old leaves whose path can be modified / re-optimized</td>
<td></td>
</tr>
<tr>
<td>• Old leaves whose path must be left unchanged</td>
<td></td>
</tr>
</tbody>
</table>

Consider,
- Existing P2MP tree that has a preferred branch node through which most of the leaves are connected
- When adding a set of new leaves, administrator may want to exclude that branch node (as it may soon be overloaded)

But,
- BNC Object applies to full P2MP tree and thus to all leaves in path request.
- Also inclusion/exclusion of any abstract node (not just branch nodes) can be helpful for the administrator, ex to avoid a malfunctioning or compromised node.

- The mechanism of explicitly specifying abstract nodes for inclusion or exclusion for a subset of destinations can be used.
Path Request Message Format

\[
<\text{PCReq Message}> ::= <\text{Common Header}>
\quad <\text{request}>
\]

where:

\[
<\text{request}> ::= <\text{RP}>
\quad <\text{end-point-iro-xro-rro-pair-list}>
\quad [<\text{OF}>]
\quad [<\text{LSFA}>]
\quad [<\text{BANDWIDTH}>]
\quad [<\text{metric-list}>]
\quad [<\text{IRO}>]
\quad [<\text{LOAD-BALANCING}>]
\]

where:

\[
<\text{end-point-iro-xro-rro-pair-list}>::= <\text{END-POINTS}>
\quad [<\text{IRO}>]
\quad [<\text{XRO}>]
\quad [<\text{RRO-List}>][<\text{BANDWIDTH}>]
\quad [<\text{end-point-iro-xro-rro-pair-list}>]
\]

\[
<\text{RRO-List}>::= <\text{RRO}>[<\text{BANDWIDTH}>][<\text{RRO-List}>]
\quad <\text{metric-list}>::= <\text{METRIC}>[<\text{metric-list}>]
\]

The mechanism of explicitly specifying abstract nodes for inclusion or exclusion for a subset of destinations!
Questions
&
Comments?
Thanks!