BGP Metric Credit

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Motivations

• BGP intent routes includes not only the route with minimum delay, but also the route with specific cumulative delay, e.g., 100ms.

• A single intent template configured on the intermediate BGP speaker may be used for multiple paths destined to different endpoints, with different resolution delay requirements.
  – Thus, the additional resolution delay requirements that can not be covered by intent template, need to be advertised in routes.
For intent route \( \langle E, l \rangle \) with delay 100ms
• how does H determine the different delay requirements for segment H---B1 and H---B2 respectively?
Typical Scenarios (cont...)

For two intent routes, \(<E_1, I>\) with delay 100 ms, and \(<E_2, I>\) with delay 200 ms

- how does B determine the different delay requirements for segment B---E1 and B---E2 respectively?
- and how does H determine the different delay requirements for the common segment H---B of two intent routes?

For two intent routes \(<E_1, I>\) and \(<E_2, I>\) both with delay 100 ms

- how does B1 determine the different delay requirements for segment B1---E1 and B1---B2 respectively?
  and how does H determine the different delay requirements for the common segment H---B1 of two intent routes?
Schemes

- **Premise**: intent routing is established between known and determined endpoints, with *predictable propagation path controlled by policy*.
  - For *multiple propagation paths with very different hop-counts*, suggest: using different intents; or using Explicit Propagation Object (EPO) list.

- **METRIC-CREDIT attribute**

  metric credit information per target headend:

<table>
<thead>
<tr>
<th>Metric Credit Information</th>
<th>Applicable for simple scenarios, such as single path.</th>
<th>TBD in next version, for complicated scenarios.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total E2E Metric Credit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Hop-counts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optional:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit Piece [Hop-count]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>or EPO ilst</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Get Metric Credit for Resolution

• Method 1: using average metric credit.

  Average Metric Credit Piece = Total E2E Metric Credit / Estimated Hop-counts
  Residual Metric Credit = Total E2E Metric Credit - AIGP metric
  Get min(average, residual) for resolution.

• Method 2: using explicit credit piece [].

  Explicit Metric Credit Piece = Credit Piece [index]
  Residual Metric Credit = Total E2E Metric Credit - AIGP metric
  Get min(explicit, residual) for resolution.

• Method 3: using Explicit Propagation Object (EPO) list (TBD)
Next step

• Any questions and comments?

Thank you!