Selective Advertisement of Multiple Paths within BGP

draft-keyupdate-idr-bgp-selective-add-paths-00

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Motivation

- RFC4271 allows a BGP speaker to only announce a single path for a given prefix (AKA, the best-path)
  - Any subsequent path announcement would replace the existing path (AKA, an implicit update)

- BGP Add-Paths is a mechanism that allows announcement of multiple paths for a given Prefix
  - Implicit path announcement was replaced with an explicit path withdrawals

- Whether to announce multiple paths for a given prefix or selective number of paths has always been a matter of a local policy of the advertising BGP speaker.

- Currently there is no way to signal announcement of multiple paths for only selected prefixes within a given address family.

- It is desirable to enable the Add-Paths capability and functionality between two BGP speakers for only selected prefixes.
  - Preference to certain customer or a management prefix set
  - Address the scale concerns of existing installed base…
Use Case

Selective Add-Path Use Case

Router 3

Router Reflect

Router 1

Router 2

10.1.1.0/24
200.1.1.0/24
0
0
200.1.200.0/24

Multiple Paths are desired for the underlay 10.1.1.0/24 but not the other subnets
Proposed Solution

- Define new BGP Selective Add-Path Capability

<table>
<thead>
<tr>
<th>Capability Code (TBD)</th>
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<tbody>
<tr>
<td>Capability Length (Multiple of 3)</td>
</tr>
<tr>
<td>1st Address Family Identifier (2 octets)</td>
</tr>
<tr>
<td>1st Subsequent Address Family Identifier (1 octet)</td>
</tr>
<tr>
<td>Nth Address Family Identifier (2 octets)</td>
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<tr>
<td>Nth Subsequent Address Family Identifier (1 octet)</td>
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</tbody>
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Proposed Solution (Continued)

- Selective Add-Path Capability mandates exchange of Add-Path Capability as well
  - Received Selective Add-Path Capability is treated as an unsupported Capability without exchange of Add-Path Capability

- Defined a new Transitive Opaque Selective Add-Path Extended Community
  - Community is only enforced if the peering has successfully exchanged the Selective Add-Path Capability
  - Community is advertised with prefixes for which multiple path (aka, Add-Paths) are desired
  - Speakers advertise Additional Paths only for prefixes with the extended community
Status

- Fairly simple and straightforward draft
- Request WG to provide comments and accept it as a WG document
Questions?