Extension of Link Bandwidth
Extended Community

draft-li-idr-link-bandwidth-ext-02

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Problems with BGP link Bandwidth

• BGP link bandwidth is now encoded in extended community attribute using 32-bit floating point-type

• data type conversion: floating-point and unsigned integer
  – Floating-point format (IEEE 754)
  – “fraction” determines the precision, the size of a number depends on “exponent”

• When the bandwidth value exceeds $2^{24}$, it may no long be accurate after converting to the floating-point format
Proposed Extensions to BGP Link Bandwidth

• A new type of IPv6 Address Specific Extended Community (RFC5701) attribute that is considered to represent 64-bits link bandwidth.
• Recommends both transitive/non-transitive extended community usage.

• **Type high**: 0x00 or 0x40
• **Transitive sub-type**: 0x06
• **Non-transitive sub-type**: TBD
• **Value**: an 8-octet unsigned integer for bandwidth in bytes per second
• **ASN**: AS number of the router which added the ext. link bandwidth community
## Comparison with Link Bandwidth Community

<table>
<thead>
<tr>
<th></th>
<th>Link Bandwidth</th>
<th>Ext. Link Bandwidth</th>
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</thead>
<tbody>
<tr>
<td><strong>Encoding</strong></td>
<td>Extended Community</td>
<td>IPv6 Extended Community</td>
</tr>
<tr>
<td><strong>Transitivity</strong></td>
<td>Non-transitive</td>
<td>Transitive/Non-transitive</td>
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<tr>
<td><strong>Format of bandwidth value</strong></td>
<td>32-bit floating point</td>
<td>64-bit unsigned integer</td>
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</table>
Implementation Info.

Project FRRouting has implemented this draft.
More comments and discussion welcomed

Thank you!