

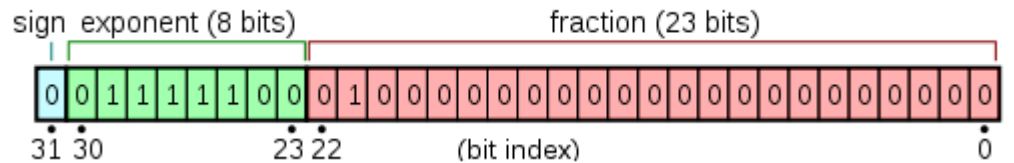
Extensions of Link Bandwidth Extended Community

<https://www.ietf.org/id/draft-li-idr-link-bandwidth-ext-00.html>

W. Li, H. Wang, J. Dong @Huawei

Problems with BGP Link Bandwidth

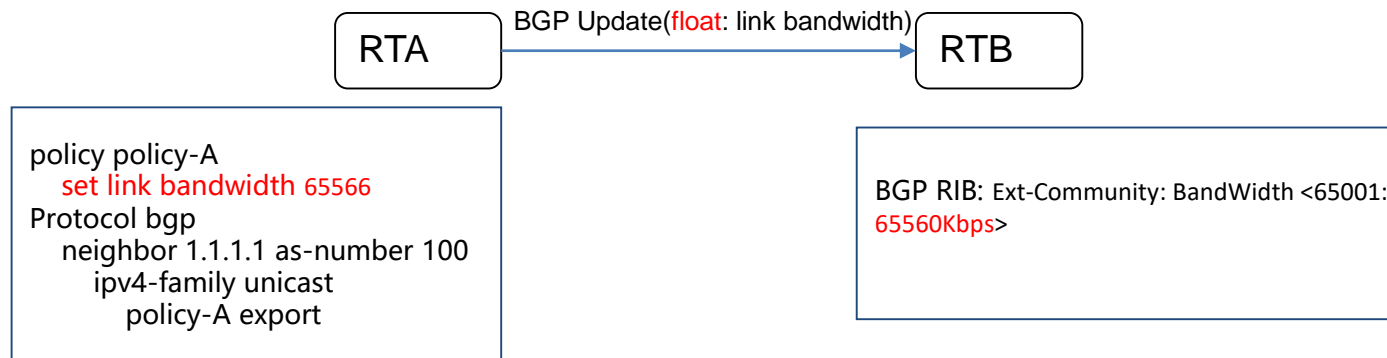
- BGP link bandwidth is now encoded in extended community attribute using 32-bit floating point-type
- data type conversion: floating-point and unsigned integer
 - Floating-point format(IEEE 754)



- “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

Problems with BGP Link Bandwidth (Cont.)

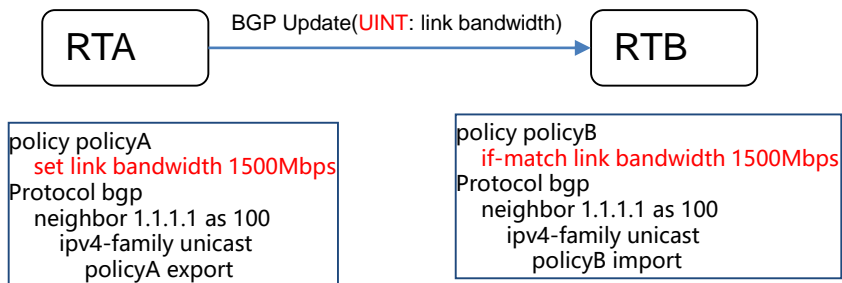
- The implementation of floating-point conversion may cause some problem



- RTA: Configure an export policy for BGP peer. The policy contains **set link-bandwidth 65566** Kbps.
- RTA: Converts the bandwidth to a floating-point number and advertises in Update.
 - Bandwidth value 65566 Kbps is converted to 8195750 bytes, encoded as: **4A FA 1D 4C** in floating-point format
- RTB: The expected the bandwidth value converted back from the link bandwidth extended community in the received BGP update should be 65566 Kbps.
 - However, in some interoperability test, some devices converted it back as: **65560 Kbps**

Proposed Extensions to BGP Link Bandwidth

- Uses a combination of the unit and unsigned integers to accurately represent the bandwidth value
 - Link Bandwidth EC in bps unit
 - Link Bandwidth EC in Kbps unit
 - Link Bandwidth EC in Mbps unit
 - Link Bandwidth EC in Gbps unit
 - Link Bandwidth EC in Tbps unit
- Usage:



– RTA: Configure an export policy for BGP peer. The policy contains **set link-bandwidth 1500 Mbps**.

– RTB: The link bandwidth value is obtained directly, avoids the problems with the floating-point format.

Next steps

- Welcome comments and discussion
- Revise the draft accordingly

Thank you!