

Extension of Link Bandwidth Extended Community

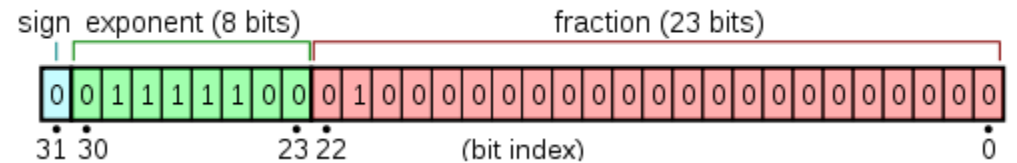
draft-li-idr-link-bandwidth-ext-02

W. Li, H. Wang, J. Dong (*Huawei Technologies*)

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Problems with BGP link Bandwidth

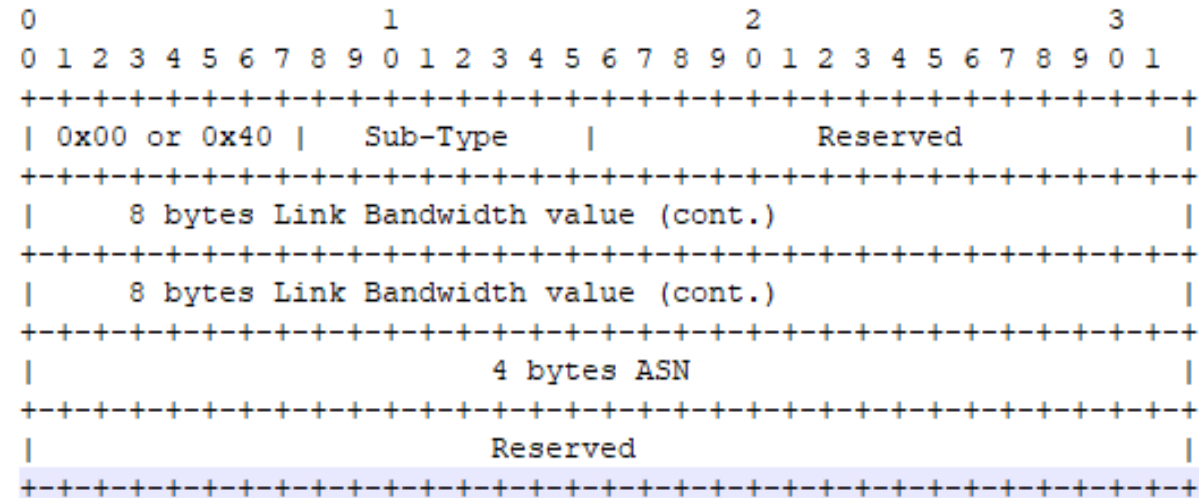
- BGP link bandwidth is now encoded in extended community attribute using 32-bit floating point-type
- data type conversion: floating-point and unsigned integer
 - Floating-point format(IEEE 754)



- “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

	Link Bandwidth	Ext. Link Bandwidth
Encoding	Extended Community	IPv6 Extended Community
Transitivity	Non-transitive	Transitive/Non-transitive
Format of bandwidth value	32-bit floating point	64-bit unsigned integer

Implementation Info.

- Project FRRouting has implement this draft

 **Merged** `bgpd: Implement extended link-bandwidth #15723`
riw777 merged 16 commits into `FRRouting:master` from `opensourcerouting:feature/extended_link_bw_...` on Apr 27

 `bgpd: Implement draft-li-idr-link-bandwidth-ext-01` ...

More comments and discussion welcomed

Thank you!