Anycast Affiliation Advertisement

draft-zzhang-lsr-anycast-affiliation-00

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Purpose

• Advertise which local addresses are affiliated with an anycast address
  • Traffic destined to the anycast address may be explicitly addressed or tunneled to an affiliated address instead of the anycast address
    • E.g. for load-balancing even when there is no ECMP
  • Maybe some other use cases as well
[I-D.boutros-bess-vxlan-evpn] Use Case

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|            |            |            |            |            |
+------------+------------+------------+------------+------------+
|---|PE1 | | PE3 |--| |
|---|VTEP1|--| +-----+ +-----+ | |--|VTEP3|
------------+------------+------------+------------+------------+

+---+ | VXL AN | +-----+ +-----+ | VXL AN | +-----+
+-----+ | |---|PE2 | | PE4 |--| |

|---|VTEP2|--| +-----+Backbone+-----+ | |--|VTEP4|

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|<--- Underlay IGP ---->|<-- Overlay BGP-->|<---- Underlay IGP ---->| CP

|<----- VXL AN ---------|<EVPN/PBB-EVPN>|<----- VXL AN ---------| DP
|<-----MPLS------>|
```
ISIS N-flag Not Enough

- RFC7794 - N-flag: Node Flag (Bit 2)
  
  Set when the prefix identifies the advertising router, i.e., the prefix is a host prefix advertising a globally reachable address typically associated with a loopback address.

- N-flag only identifies host addresses belonging to a router
  - No other semantics are conveyed

- Explicit anycast affiliation need to be advertised
Why Explicit Anycast Affiliation

• Just because a node advertises two local addresses A and B it does not mean A and B are exchangeable.

• The affiliation may have to be one-way
  • Traffic destined to an anycast address may use an affiliated address, but the other way may not be desired or allowed at all (e.g., if a transit node changes anycast address to an affiliated address it must not be changed back later)

• A node may have different anycast addresses, each with a different affiliated address

• A node may need to withdraw the affiliation advertisement even when all the relevant addresses are still reachable
IGP: Anycast Affiliation sub-TLV

• Attached to the following of an anycast host prefix
  • ISIS Extended Reachability TLV
  • OSPFv2 Extended Prefix TLVs
  • OSPFv3 Intra/Inter-Area-Prefix TLV

• Includes a list of affiliated addresses
BGP: Anycast Affiliation Extended Community

- For an anycast prefix advertisement, an Anycast Affiliation EC may be attached for each affiliated address
- It is an IPv4/IPv6 Address Specific EC
  - Sub-type or type being “Anycast Affiliation”
  - Global Administrator field: the affiliated address
  - Local Administrator field: 0
Comments Appreciated!