Extended Community Derived from Route Targets

draft-zzhang-idr-rt-derived-community

Jeffrey Zhang, Juniper Networks 
IDR WG, IETF111
A General Example Use Case

• A VPN of 10 PEs
  • With Route Target RT1, which is an EC (say EC1) with sub-type 0x2
  • RT1 == EC1
    • But when we say “Route Target”, we emphasize that it is an EC used to control the propagation and importation of routes
      • Routes with RT1 will be propagated to and imported by all the 10 PEs of the VPN
      • When we just say “Extended Community”, the above semantics is not implied
  • Now a PE10 needs to propagate a route to PE1 only and PE1 needs to know that the route is related to the VPN
    • A Route Target (RT2) is attached to the route so that only PE1 imports it
    • An EC (EC2) is attached and PE1 knows EC2 is related to the VPN
    • RT2 != EC2 != RT1
    • While RT1 is for the VPN, it can’t be attached to the route
    • While EC2 can be an arbitrary EC configured to be related to the VPN, it would be nice to derive the EC2 from RT1
RT-derived EC

• For any RT, an EC can be derived from it by changing the sub-type to a new value
  • And the original RT can be recovered by changing the sub-type back
• IANA has assigned sub-type 0x15 for this purpose from the following registries:
  • Transitive Two-Octet AS-Specific Extended Community Sub-Types
  • Transitive Four-Octet AS-Specific Extended Community Sub-Types
  • Transitive IPv4-Address-Specific Extended Community Sub-Types
  • Non-Transitive Opaque Extended Community Sub-Types
  • EVPN Extended Community Sub-Types
• IANA has assigned a new type "RT-derived-EC" with value 0x0015 from Transitive IPv6-Address-Specific Extended Community Types registry
Specific Use Cases

- draft-ietf-bess-bgp-multicast-controller-06, section 2
- draft-ietf-bess-evpn-igmp-mld-proxy-11, section 9.5
  - Similar problem domain, but four EVPN specific ECs are defined corresponding to four types of RTs that EVPN uses:
    - Two-octet AS-Specific RT, Four-octet AS-Specific RT
    - IP4-Address-Specific RT, IP6-Address-Specific RT
  - RT-derived EC could have been used but not
    - The RT-derived EC concept was brought up late
    - EVPN specific ECs (type 0x6) are preferred
  - *This document does not attempt to change existing behavior; it’s mentioned purely as a theoretical example use of RT-derived EC*
Next Steps

• Comments appreciated!

• A simple *informational* draft
  • To share the idea for any applicable uses

• Seek WG adoption