

Extended Community Derived from Route Targets

draft-zzhang-idr-rt-derived-community-02

Jeffrey Zhang, Jeff Haas, Keyur Patel
IDR WG, IETF115

A General Example Use Case

- A VPN of 10 PEs
 - With Route Target RT1, which is an Extended Community (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 (1)

- 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*

Specific Use Cases (2)

- draft-ietf-bess-bgp-multicast-controller-06, section 2
- ietf-idr-legacy-rtc
 - Translated Route-target Extended Communities

Scope and Next Steps

- This document only specifies the derivation of an EC from a RT
 - By changing subtype value from 0x2 to an IANA-assigned 0x15
- Does not specify how the derived EC is used
- Seek WG adoption