Multipath Support for IGMP/MLD Proxy

draft-ietf-pim-multipath-igmpmldproxy-00

Hitoshi Asaeda (NICT), Luis M. Contreras (Telefonica)
Background

- There are many situations where an IGMP/MLD proxy is multiply attached to the different networks (e.g., ISP–A and ISP–B) or by means of different interfaces (e.g., wired and wireless links, WiFi and 5G).
- RFC4605 does not support such multihoming situations.
- Enable an IGMP/MLD proxy device to use multiple upstream interfaces and receive multicast packets through these interfaces.
Overview

• The proposed extension allows IGMP/MLD proxy devices to receive multicast sessions/channels through different upstream interfaces
  • Intended status is *Informational*

• Upstream interface selection
  • Subscriber–based upstream interface selection
  • Channel–based upstream interface selection

• Upstream interface configuration
  • Address prefix record
  • Interface priority
    • To enable either interface takeover or robust data reception

• Introduce dynamic upstream interface configuration
  • Signaling–based upstream interface configuration
    • IGMP/MLD protocol extension (intended status is *PS*) is described in a separate draft
  • SDN–like controller–based upstream interface configuration
Upstream interface selection

• Subscriber-based upstream interface selection
  • One or multiple upstream interface(s) is selected from candidate upstream interfaces based on subscriber address prefix

• Channel-based upstream interface selection
  • One or multiple upstream interface(s) is selected from candidate upstream interfaces based on channel/session ID
  • Source address prefix is prioritized

• Both subscriber-based and channel-based upstream interface selections can be coexisted
  • Subscriber-based upstream interface selection is prioritized

• Use default upstream interface if no/wrong configuration
Upstream interface configuration

• Address prefix record consists of;
  (subscriber address prefix, (channel/session ID))
  where channel/session ID is;
  (source address prefix, multicast address prefix)
  • Each default value is null (=*)
    • Possible combinations per interface can be: (Rcv,S,G), (Rcv,S,*), (Rcv,*,G), (*,S,G),
      (*,S,*), (*,*,G), (*,*,*) – prioritized order

• Interface priority
  • For interface takeover
    • Select one interface from multiple interfaces if address prefix record is identical but
      interface priority is not identical
  • For robust data reception
    • Use multiple interfaces if both address prefix record and interface priority are identical
Attn: subscriber–based upstream selection

• Upstream interface selection “per subscriber/receiver”
  • Aim to differentiate receivers based on their contract or other matters/considerations

• Note that configuration mismatch happens if downstream link is a shared link
Next steps

• Define default active interval to detect an inactive upstream interface for interface takeover

• Consider interaction with signaling methods (i.e., IGMP/MLD protocol extension)

• Request updating IGMP/MLD proxy YANG model (after publication)