Multiple Upstream Interface Support for IGMP/MLD Proxy

draft-asaeda-pim-multiif-igmpmldproxy-07

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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.
Objectives and expected benefits

Objectives

• Support multiple upstream interfaces for an IGMP/MLD proxy device
  • An IGMP/MLD proxy device enables the reception of multicast sessions/channels through the different upstream interfaces
• Propose two solutions (static and dynamic configurations) based on the following requirements draft
  • draft-ietf-pim-multiple-upstreams-reqs-08 (expired)

Benefits

• Flexible operation
  • Subscriber-based (i.e., client address based) upstream selection: One or more upstream interface(s) is selected per subscriber/receiver
  • Channel-based upstream selection: One or more upstream interface(s) is selected per channel/session
• Robust data reception
  • More than one upstream interface used per channel/session when more than one upstream interface is enabled for the channel/session
• Upstream interface takeover
  • Switch inactive upstream path to another active (backup) path
Upstream selection mechanisms

• draft-asaeda-pim-multiif-igmpmldproxy (intended status: Informational) specifies:
  • Static upstream interface configurations
    • Subscriber-based UIF selection
    • Channel-based UIF selection
      • UIF selected per (S,G) or (*,G) or (S,*) basis
    • Interface priority-based UIF selection
  • Use default upstream interface if no/wrong configuration
  • Introduce SDN-like controller-based upstream interface configuration
    • Detail specification will be described in a separate document
  • Introduce dynamic upstream interface configuration with the following document

• draft-contreras-pim-multiif-config (intended status: Proposed Standard) specifies:
  • Dynamic (i.e., signaling-based) upstream interface configuration
    • Requires IGMP/MLD extensions
Current and next steps

• PoC performed and documented in a publication

• Next step
  • Define default active interval to detect an inactive upstream interface
  • Consider interaction with signaling methods (i.e., IGMP/MLD messages)
  • Consider security threats from potential DoS attacks
  • Request updating IGMP/MLD proxy YANG model (after publication)

• WG draft adoption?