



# Multipath Support for IGMP/MLD Proxy

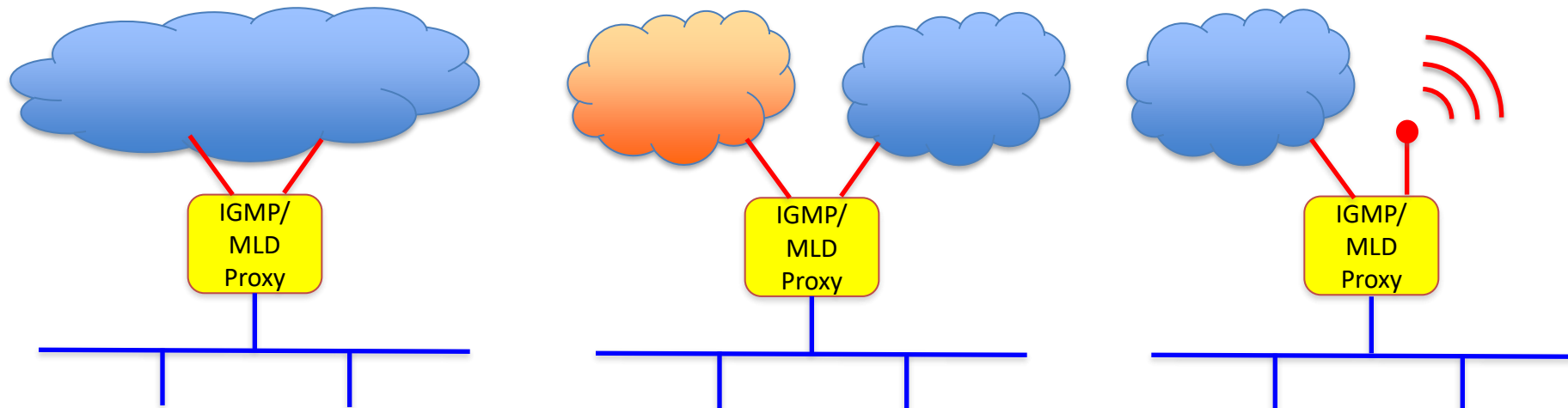
draft-ietf-pim-multipath-igmpmldproxy-01  
draft-contreras-pim-multiif-config-02

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# Background

- There are many situations where an IGMP/MLD proxy is multiply attached to the same or different networks (e.g., Internet and Intranet, different slices in 5G) or by means of different interfaces (e.g., ethernet and wireless link, LTE and WiFi)
- 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.



# Upstream selection mechanisms

- **draft-ietf-pim-multipath-igmpmlproxy** specifies:
  - Static upstream interface configurations
    - Channel-based UIF selection
      - UIF selected per (S,G) or (\*,G) or (S,\*) basis
    - Subscriber-based UIF selection -> **under review how to implement this**
    - Interface priority-based UIF selection
  - Controller-based upstream interface configuration
    - SDN-like central management -> **a new draft is in preparation for augmenting YANG models**
- **draft-contreras-pim-multiif-config** specifies:
  - Automatic (i.e., signaling-based) upstream interface configuration
    - Requires IGMP/MLD extensions



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draft-ietf-pim-multipath-igmpmldproxy-01

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# Status

- Draft adopted before IETF 120
- Issue identified in relation to the subscriber-based upstream selection
  - Configuration mismatch happens if the downstream link is a shared link
- Under analysis potential solution for subscriber verification
  - A possible way is to leverage extensions to the IGMP/MLD messages [RFC9279] to verify the subscriber's signature transmitted in IGMP/MLD join/subscribe messages.
  - Next version will provide details on this direction



# Signaling-based configuration for supporting multiple upstream interfaces in IGMP/MLD proxies

draft-contreras-pim-multiif-config-02

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# Two aspects to consider

- Policies defined in the IGMP/MLD Proxy for selecting upstream interfaces
  - Subscriber based <- under analysis
  - (S,G)
  - (\*,G)
  - (S,\*)
- Signaling situations
  - Multicast channel/source state retrieval per upstream interface
  - Multicast channel/source request from one or more upstream interfaces
  - Maintenance of multicast membership on the downstream interfaces including information of the upstream interface used per channel and source

These can be common to the other Upstream Selection Mechanisms

These are particular of this signaling method and can be defined as extensions following RFC9279

# Status

- Draft updated according to new terminology in draft-ietf-pim-multipath-igmpmlproxy
- Now also considered extensions for IGMP
  - Extensions are presented in a generic way, but referring to the specificities of MLD and IGMP when applicable
- Security considerations added
  - Malicious applications could request content from multiple available interfaces so to saturate the network links.
  - The frequency of the signaling messages, or the number of TLVs on them, could be maliciously high impacting the processing capability of the IGMP/MLD proxy
- Next steps: keep collecting comments and progressing the solution(s) document(s) by preparing new version for IETF 122