Multiple Upstream Interface Support for IGMP/MLD Proxy

draft-asaeda-pim-multiif-igmpmldproxy-04

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Background

- There are many situations an IGMP/MLD proxy multiply attached to same or different networks (e.g., Internet and Intranet, different slices in 5G) or different interfaces (e.g., ethernet and wireless link, LTE and WiFi), yet 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.
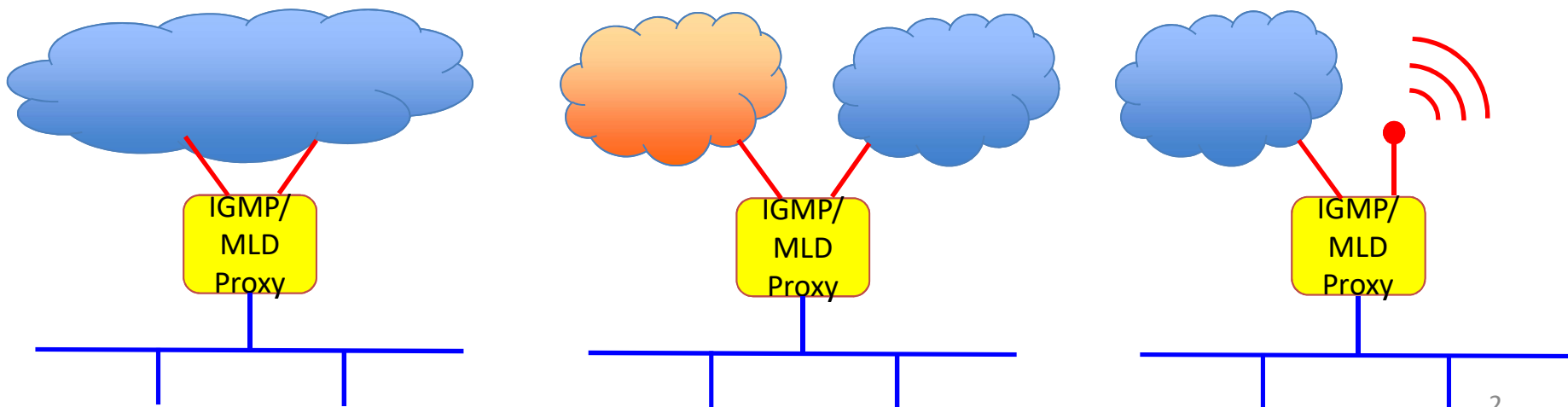
Upstream Selection Mechanisms

- Static Upstream Interface Selection
  - Channel-Based Selection
  - Subscriber-Based Selection
  - Priority-Based Selection
- Automatic Upstream Interface Selection
  - Signaling-based Upstream Interface Configuration
    - TBD – this requires IGMP/MLD extensions, probably subject of a different draft
- Controller-based Upstream Interface Configuration
  - SDN-like centralized control <- draft update is here

SDN-like Centralized Control

- A centralized controller instructs the proxy what upstream interface to use based on the multicast channel or the user
  - Control and management interface has to be supported by the proxy in order to receive configuration instructions from the controller.
- The controller could interact with a number of proxies in the network
  - Optimized decisions for managing all the multicast traffic in the network in a coordinated manner
  - Decisions based on congestion, user location, etc.

Controller-based Upstream Interface Selection

- Options for association to a specific upstream interface

  - Specific user (source IP)

  - (S,G)

  - (*,G)

  - (S,*)

- Precedence should be defined to indicate priority

- Default upstream interface when no matching an explicitly configured behavior.

Next steps

- Keep analyzing implications of the centralized solution
  - Impacts on IGMP/MLD YANG model
  - PoC planned to develop the centralized solution
- Provide a revised version for IETF#108 and discuss again

- Comments welcome

Thanks!