

106th IETF, Nov. 2019, Singapore

Multiple Upstream Interface Support for IGMP/MLD Proxy

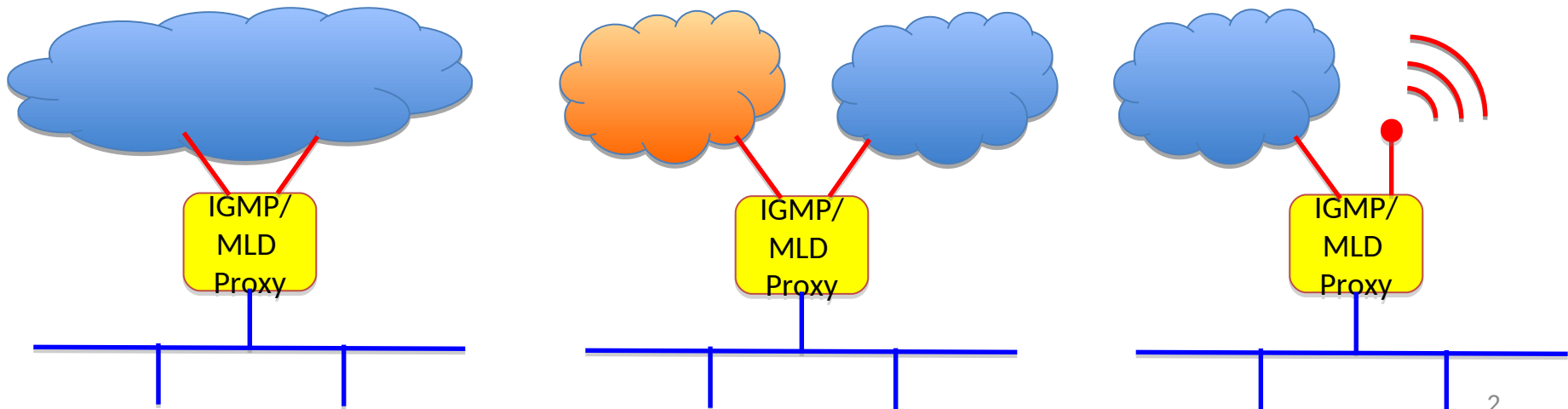
draft-asaeda-pim-multiif-igmpmldproxy-03

Hitoshi Asaeda (NICT)

Luis M. Contreras (Telefonica)

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.



Objective

- 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 the solution by following the requirements draft
 - draft-ietf-pim-multiple-upstreams-reqs-08
 - Transferred to ISE stream, pending of addressing comments from AD

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 other active (backup) path

Use cases requiring multiple upstream interfaces

- Multicast wholesale offer for residential services
 - Multicast resiliency
 - Load balancing for multicast traffic in the metro segment
 - Network merging with different multicast services
 - Multicast service migration
-
- All of them are applicable for both fixed and mobile networks

Note that these use cases are described in the requirement draft

Automatic upstream interface configuration

- Questions
 - How proxy can automatically select appropriate upstream interface(s) for each channel?
 - How proxy can quickly detect inactive upstream interfaces?
 - Monitoring the regular IGMP/MLD Query and/or PIM Hello messages does not give quick actions
 - Is it allowed to define new IGMP/MLD messages?
 - How triggers? When (or in what kinds of conditions) routers switch to the other (or backup) upstream interfaces?

Centralized control (SDN-like)

- 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.

Next steps

- Keep the analysis of the automatic configuration based on signaling procedures
- Understand the control and management interface implications for the centralized control solution
- Provide the revised draft before IETF#107 and discuss again
- Comments welcome