Requirements for the extension of the MLD proxy functionality to support multiple upstream interfaces

<draft-ietf-pim-multiple-upstreams-reqs-07>

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Motivation

- Currently, there are operational situations that cannot be (simply) resolved with existing solutions
    - 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
- Solutions based on PIM suffer from limited deployment (end-to-end) in real networks
- IGMP/MLD supporting multiple upstream interfaces can offer a simpler alternative for addressing such scenarios
    - Broad deployment of IGMP/MLD in operational networks
    - Avoidance of some complexities (e.g., multi-domain routing, external control elements, etc.)

Objective of the draft

- To define the functional requirements that an IGMP/MLD proxy should support for satisfying the real operational situations identified

- A requirements draft is necessary for a comprehensive analysis of missing functionality when facing use cases relevant for operators

- These requirements should help on the definition of a solution for IGMP/MLD proxy with multiple upstream interfaces (2 or more)
  - The requirements are of different nature: operational reqs., service reqs., policy reqs., etc.
  - The solutions should be applicable to the situations described in the draft

History of the draft

- Adopted after IETF 92nd (Dallas)
  - Problem presented to different WGs before (originated in MULTIMOB)

- Some initial security considerations added in -01 presented in IETF 94

- Version (-02 &) -03 included two new applicability scenarios

- Version -04 to version -07 have addressed different comments received

- AD review beginning 2018, requesting more clear justification for the requirements draft
  - More details in next slides

AD review

- The use cases and requirements are relatively weak and general
  - Existing technology does not allow to solve simple service situations. Network operators don't have the necessary tools for addressing even those simple cases.
- The two main requirements seem both generic and pretty obvious
  - the proxy should deliver control messages from/to the user to/from the corresponding upstream
  - the proxy should be able to select an upstream based on the requested service (group/source combination, when applicable) or other criteria (e.g. load balancing)
    - they reflect the need of coordinating actions from a single element (the IGMP/MLD proxy) optimizing the delivery of the content within the network at any time

AD review

- No specific requirements for more complex scenarios, e.g.:
  - Fast switching among interfaces
    - Avoidance of video interruption or buffering has to e enforced (e.g. KPIs from IRU-T Y.1540, RFC 4445, etc)
  - Situation of the user in service migration
    - Operational situation of the user transitioning from one platform to another in a smooth manner
- Marketing-like statements
  - other potential alternatives to IGMP/MLD proxy with multiple upstreams could face more complexities (like multi-domain routing in the case of PIM, or the need of some external elements if the coordination is outside the proxy)
  - We agree on avoiding marketing-like statements
- Additional editorial comments
 - Fixed in the -07 version

Next steps

- Improve the text with **more operational details** according to the discussion in mailing list
  - Addition of some of the comments in the mails
- Clarify in this session **any other aspect** that have to be covered
- **Start** the discussion for **solution drafts** after the clarification of the requirements
  - E.g., draft-asaeda-pim-multiif-igmpmldproxy

BACKUP SLIDES

Problem statement

- General application:
  - Sharing of a common network access infrastructure among different multicast content providers

- Advantages
  - Subscribers can get their preferred contents from different multicast content providers without network constraints and without requiring PIM routing on the access / aggregation device
  - Redundancy
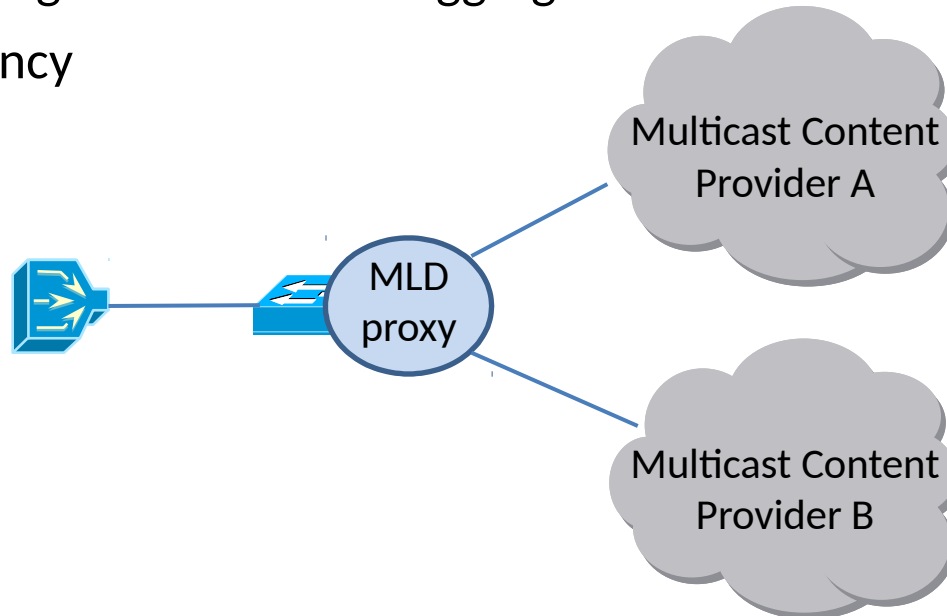
Purpose and Content

- Purpose
  - To define the functionality that an IGMP/MLD proxy with multiple upstream interfaces should have in order to support different scenarios of applicability in both fixed and mobile networks
- Content
  - Problem statement
  - Scenarios of applicability *(more detail in next slide)*
  - Requirements for these scenarios are identified
  - Security considerations

Scenarios of applicability

- 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 of applicability for fixed and mobile networks

Requirements

Functionality	Multicast Wholesale	Multicast Resiliency	Load Balancing	Network Merging	Network Migration
Upstream Ctrl Delivery	X	X	X	X	X
Downstream Ctrl Delivery	X	X	X	X	X
Active/Stdby upstream		X			
Upstr i/f group selection			X	X	
Upstr i/f all selection		X			X
ASM	X	X	X	X	X
SSM	X	X	X		X