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 92\textsuperscript{nd} (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 be 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

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<th>Functionality</th>
<th>Multicast Wholesale</th>
<th>Multicast Resiliency</th>
<th>Load Balancing</th>
<th>Network Merging</th>
<th>Network Migration</th>
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