Mobile Multicast Sender Support in PMIPv6 Domains

draft-ietf-multimob-pmipv6-source-02

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Objective of the Draft

Define Multicast Source Mobility for PMIP

Three Basic Multicast Scenarios:

1. Base-line approach compliant to RFC 6224:
   - Simple, directly reflects PMIP routing
2. Direct Multicast Distribution
   - Based on Proxies, PIM-S(S)M or BIDIR PIM
3. Optimized Source Mobility
   - Extended Proxies for traffic optimization
Document History

- Version draft-ietf-multimob-pmipv6-source-01
  - Presented in Vancouver
  - Some WG feedback, pointers on issues by Stig

- Current version draft-ietf-multimob-pmipv6-source-02
  - Added clarifications in response to WG feedback.
  - Fixed issues.
  - Completed specification of multiple upstream proxy.
  - Clarified proxy peering operations.
3. Optimized Source Mobility

- Scenario: Proxies at MAGs
- Objective: Optimize traffic exchange from a local MAG - including policy implementations
- Requirements:
  - Unique coverage of receivers
  - Prevention of Routing Loops

1. Multiple upstream proxy for sources (MUIMP)
   - Traffic forwarded to multiple LMAs

2. Proxy Peering Interface (PPI)
   - Horizontal traffic exchange between proxy instances
3.1 Multiple Upstream Proxy

- Single Proxy instance with multiple upstreams deployed at MAG

- Objectives:
  - Distribute Multicast services according to local policies
  - Unambiguously guide traffic to upstream interfaces

- Approach:
  - Route according to a filter table
### 3.1 Filter Table for MUIMP

<table>
<thead>
<tr>
<th>Multicast State</th>
<th>Upstream Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>((S_1)_{local}, *)</td>
<td>UP-IF1</td>
</tr>
<tr>
<td>(,*),((G_1))</td>
<td>UP-IF2</td>
</tr>
<tr>
<td>((S_2),((G_2))</td>
<td>UP-IF3</td>
</tr>
<tr>
<td>(,*)</td>
<td>UP-IF1</td>
</tr>
</tbody>
</table>

- **Processing**: Apply first matching filter
- **For Sources**: Can express PMIP policy-based routing
- **For Receivers**: Can sort according to Groups/Channels, but not policies
3.1 Filter-based Routing for MUIMP – Typical Use Cases

- Express PMIP policies (for sources only)
- Separate local and remote services:
  1. Have selected local channels, keep default remote, or
  2. Provide default services locally, provide selected channels from the remote
- Can do many more complicated things ... but the goal is to support straight-forward needs
3.2 Proxy Peering (update)

- Defines new interface type: Peering
  - Established between any two proxy instances for shortcutting traffic
  - Silent virtual link in regular proxy operations

- Fixed MLD details:
  - IGMP2/MLD1: Install incoming filter at MAGs, only
  - IGMPv3/MLDv2: Source-specific traffic selection (ASM and SSM)

- Source-specific signaling will avoid duplicate traffic
Future Steps

- Some (few) editorial improvements needed
- Improve according to WG feedback
- Elaborate security section
- Add source operations for fast handover solutions? ... (in case the WG will identify a reasonable path to do fast handovers 🤔)
Questions?