Internet Draft:
Seamless Multicast Handover in a Hierarchical Mobile IPv6 Environment (M-HMIPv6)
Overview of M-HMIPv6

- HMIPv6 introduces Mobility Anchor Points as proxy elements working as regional routers.
- Use local MAP as anchor point for multicast communication.
- All multicast traffic are directed through the MAP.
- Using Regional Care –of Address RCoA as multicast subscriber or source address.
- Traffic between MN and MAP using a bi-directional tunnel.
Overview of M-HMIPv6 (cont’)

-when changes location within the MAP domain, register its new LCoA with the MAP, no effects on multicast routing tree

-when entering a new MAP domain, MN tries to sustain multicast connection via previously established MAP

-learn about support M-HMIPv6 of the new MAP through router advertisement

-only if the new MAP support M-HMIPv6 then multicast handover occurs
Overview of M-HMIPv6 (cont´)

Note:
If a mobile node does not support M-HMIPv6, it will use MIPv6 tunnel through the Home Agent

Therefore M-HMIPv6 can be regarded as an extension of HMIPv6, and
HMIPv6 an extension of MIPv6
Operation of a multicast listener

- To join a multicast group away from home, the MN tunnels the MLD listener report to its current MAP using RCoA as source address.

- The MAP records the group address in its Binding Cache for subscribing, preserving MNs multicast group membership and also forwarding multicast packets to MN.

- When MN changes MAP domain, the MN submits a Binding Update with its new LCoA to the previous MAP.

- The previous MAP redirects multicast packet forwarding to the MN’s new LCoA.

- After having joined into the new MAP domain, send a Binding update to previous MAP to eliminate its Binding Cache Entry and end packet forwarding.
Operation of a multicast sender

- In foreign MAP domain a MN (source) initiates multicast-based communication by sending packets through its MAP using RCoA as source address.
- Source address may change and to let the receivers recognize the sender the Home Address Destination Option must be included.
- The routing tree will be constructed originating at the MAP, means movement within the MAP domain will not effect the routing tree.
- Moving into a new MAP domain, MN submits a Binding update with its new LCoA to the previously established multicast-forwarding MAP and continues its multicast delivery via this previous MAP.
Operation of a multicast sender (cont’)

If new domain support multicast, initiates a new multicast tree with the new RCoA as source address anchored at its current MAP

Handover will occur after a timeout
Multicast specific extensions of MIPv6, HMIPv6 and MLDv2
M-HMIPv6 support is advertised within the MAP option messages as used for router advertisement according to HMIPv6
### M-HMIPv6 flag in MAP option message

<table>
<thead>
<tr>
<th>Type</th>
<th>Length</th>
<th>Dist</th>
<th>Pref</th>
<th>M</th>
<th>Reserved</th>
<th>Valid Lifetime</th>
<th>Global IP Address for MAP</th>
</tr>
</thead>
</table>

**Flags:** * Used by HMIPv6 M When set indicates that M-HMIPv6 is supported by the current MAP
Use of Home Address Destination Option in mobile multicast

Use of Home Address destination option must be included in M-HMIPv6 which is not the case in MIPv6 multicast

Binding Cache processing at Correspondent Node

In contrast to MIPv6 unicast CN need not to verify multicast packets with respect to is Binding Cache, because received multicast packets with Home Address Option at CN generally do not have Binding Cache Entry of the home address
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Home Agent Multicast Membership control

HA needs to take care of local multicast group management.

Two possibility
1. Supply full multicast routing functionality at HA
2. use a proxy agent