



Proxy Mobile IPv6 Extensions to Support Flow Mobility draft-ietf-netext-pmipv6-flowmob-06

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Berlin, NETEXT WG, 2013-07-30

Current status (-06)

- The issue tracker used to send comments/suggestions/issues:
 - <http://trac.tools.ietf.org/wg/netext/trac/query?component=pmipv6-flowmob>
- 10 tickets submitted
 - More on this next
 - Most of them addressed
 - Need to be closed by submitters

Issue tracker status (#14)

- <http://trac.tools.ietf.org/wg/netext/trac/ticket/14>
 - Align terminology (by Pierrick)
 - Description: “In section 3.2 both MN-LL-Identifier and Mobile Node Link-Layer Identifier. Wording should be aligned.”
- Response:
 - Fixed in -06

Issue tracker status (#13)

- <http://trac.tools.ietf.org/wg/netext/trac/ticket/13>
 - remove Hybrid scenario for prefix management (by Pierrick)
 - Description: “Hybrid scenario (scenario 3) is not detailed (section 3.2.3 basically says nothing). If we can't give motivation for scenario 3, we should remove it.”
- Proposed Response
 - Add more details (maybe also a figure) in -07

Issue tracker status (#11)

- <http://trac.tools.ietf.org/wg/netext/trac/ticket/11>
 - Vague assumption on handover decision model (by Pierrick)
 - Description: “The I-D is not clear about the mobility initiator (mobility initiated by the mobile node or by the LMA?). For example, section 3.2.1 seems to implicitly assume LMA initiated mobility [the local mobility anchor does not need to perform any kind of signaling in order to move flows] while section 3.2.2 states that “The trigger for the flow movement can be on the mobile [...] node or on the network”

However, the assumption on handover decision making must be clearly stated somewhere in the document (use-case section or in the beginning on the section “basic operations”....). Besides, it must be clarified that decision to move flows MUST be either on the MN or the LMA, not on both. The point is: when LMA and MN decision do not match, only one of these two entities must be able to make the final decision, otherwise there no way to synchronize forwarding policies. Note that this point has been already discussed on list.”
- Proposed Response
 - The baseline is MN-initiated, but it does not restrict alternatives
 - Add text to highlight that in a given deployment “the decision to move flows MUST be either on the MN or the LMA, not on both”

Issue tracker status (#17)

- <http://trac.tools.ietf.org/wg/netext/trac/ticket/17>
 - restrict scenario #2 to LMA initiated handover (by Pierrick)
 - Description: “scenario #2/section 3.2.2 gives two examples of triggers for MN initiated handover:
 1. by using layer-2 signaling: what kind of L2 signaling, between MN and LMA, can be used as mobility trigger? It must be clearly stated if such a statement implicitly leads to requirement on L2 (e.g. support of IEEE 802.21 required).
 2. by explicitly start sending flow packets via a new interface: this statement seems to conflict with the need for FMI/FMA. If the packet can reach the LMA, the MAG does need to be configured (I can't remember if we have already discussed this on the list... sorry if so...)If operations for MN initiated handover cannot be clearly described, it should mentioned that scenario #2 covers only LMA initiated handover only.”
- Proposed response
 - Related to issue #11
 - Example #2 above does not assume MN packets reach the LMA, but the MAG, which then starts the flow handover signalling
 - Add text to clarify this in -07

Issue tracker status (#12)

- <http://trac.tools.ietf.org/wg/netext/trac/ticket/12>
 - missing considerations on how to maintain consistent forwarding policies (by Pierrick)
 - Description: “Introduction and section 3.2 require consistent forwarding policies in both LMA and MN. That's true, but, it should also be stressed that, when the MN (or the LMA) moves a flow (i.e. update its forwarding policy), the LMA (or the MN) must update its policy accordingly. The document states that digression on policy consistency is out of scope; but dynamic policies alignment is a key requirement and the document should gives clues on that. The point is that this document is useless if there is no way to maintain consistent policies.”
- Response
 - Add text to clarify that policies should be kept consistent

Issue tracker status (#16)

- <http://trac.tools.ietf.org/wg/nettext/trac/ticket/16>
 - requirement for single interface (by Pierrick)
 - Description: “In section 3.2.1: [if the IP layer at the mobile node shows one single interface, then the mobile node has one single IPv6 address configured at the IP layer: pref1::mn1. Otherwise, two different IPv6 addresses (pref1::if1 and pref1::if2) would be configured.]

Isn't "mobile node showing one single interface" a requirement? If two different IP addresses are configured, how IP flow mobility can provide IP session continuity?”
- Response
 - If two different IP addresses are configured, IP session continuity is still possible (for each of the configured IP addresses). What is needed is the network to deliver packets for IP X to the right MN's physical interface, and the MN to select the right outgoing interface when sending traffic back (of course using IP X as source address).
 - Add text to clarify this in -07

Issue tracker status (#15)

- <http://trac.tools.ietf.org/wg/netext/trac/ticket/15>
 - use "update notification" for FMI/FMA (by Pierrick)
 - Description: "If we go for pBU triggered by LMA signaling, the solution should use update notification UPN/UPA from draft-krishnan-netext-update-notifications (If adopted by the WG) instead of FMI/FMA which are functionally similar."
- Response
 - Proposal: use the notification message (draft-ietf-netext-update-notifications) to trigger PBU/PBA for flow mobility purposes
 - This would help to address issue #17 (the MAG could also request moving a flow to the LMA, covering the MN initiated handover triggers documented there)

Issue tracker status (#20, #19 & #18)

- <http://trac.tools.ietf.org/wg/netext/trac/ticket/20>

- Re-use of the extensions defined in RFC5648 (by Behcet)
- Description: “In RFC 5648, BID is used as follows:

A new Binding Identification

(BID) number is created for each binding the mobile node wants to create and is sent in the Binding Update. The home agent that receives this Binding Update creates a separate binding for each BID.

In PMIPv6, PBU is sent by MAG and only one PBU is sent by a single MAG.

The author claims that in PMIPv6 we can associate each of the interfaces with a

binding identifier (BID) and use it to decide how to route a given flow.

However, in PMIPv6, LMA routes the packet to Proxy-CoA, i.e. to the MAG not to the MN's specific interface. Proxy-CoA should be in the flow binding entry table.

Therefore the use of BID as copied from RFC 5648 is totally unwarranted in the context of PMIPv6 flow mobility.”

Issue tracker status (#20, #19 & #18)

- <http://trac.tools.ietf.org/wg/netext/trac/ticket/19>

- Issue in using BID from RFC 5648 (by Behcet)
- Description: “In the draft, BID is mentioned many times: Fig. 3 & Fig. 5 show BID values 1 from MAG1 and 2 from MAG2.

BID is mainly defined in RFC 5648 for multiple-interfaced mobile nodes with Mobile IPv6 functionalities. The BID is an identification number used to distinguish multiple bindings REGISTERED BY the MOBILE NODE. Each BID is GENERATED and MANAGED by a MOBILE NODE in Mobile IPv6.

In Proxy Mobile IPv6, MOBILITY MANAGEMENT of MOBILE NODES WITH MULTIPLE INTERFACES IS RUN in DIFFERENT INDEPENDENT MAGs. Each MAG sees only one interface. Because of all these reasons, BID loses its meaning.

In the draft, Sec. 5.1, it says that BID is assigned and used by the local mobility anchor. It is not explained why LMA would need BID in searching the binding cache for flows? Remember that RFC 5648 is not about flow mobility, so RFC 5648 assumes a single entry for each interface of MN in the binding cache.”

Issue tracker status (#20, #19 & #18)

- <http://trac.tools.ietf.org/wg/netext/trac/ticket/18>
 - Interface marking is needed (by Behcet)
 - Description: “Sec. 5.1 on Multiple Proxy Care-of Address Registration needs to have a major revision. In RFC 6089, MN can register mcoa's because MN knows it has multiple interfaces. In PMIPv6, MAG sends PBU and MAG is connected to only one interface of MN not multiple so MAG can not make mcoa's or multiple proxy registrations.

Solution: LMA after receiving PBU from the second MAG for an MN with an existing binding cache entry must mark this interface as visiting interface to distinguish it from the first "home" interface and LMA must indicate this marking in PBA. This way the second MAG knows it has made multiple proxy registration. MAG can then initiate flow mobility.”

Issue tracker status (#20, #19 & #18)

- Response
 - The use of BID in the flow mobility cache and extended BC provide the same functionality
 - Re-using the extensions defined in RFC6089, which is about flow mobility (in the context of MIPv6)

Next steps

- Submit -07 soon after this meeting
- Go for WGLC with -07?