DMM Framework and Analysis based on Functional Elements

draft-liebsch-dmm-framework-analysis

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DMM WG
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First Notes

• This draft is NAFGAD  
  (Not Another Framework and Gap Analysis Draft)

• Draft is based on discussion from Vancouver IETF84

• Draft proposes Functional Entities to enable DMM use cases
  – Can apply to solutions that are solely based on existing IP mobility protocols
  – Can apply to solutions which get support from non-mobility protocols
Methodology

• Define a set of Functional Entities that enable DMM use cases and IP address continuity
  – Enable level of indirection and associated control
  – Enable establishment of MN’s mobility context at MN’s new anchor
• Keep these functions decoupled from IP mobility management protocols, but complementary
• Apply DMM Functional Entities to architecture components of existing architectures & associated protocols
  – Mobility protocols, Routing plane in transport network, ..
• Analyze, if a DMM function can be accomplished by existing protocol
• Identify gap and protocol component to extend
Existing vs. DMM Functional Entities

Proxy Mobile IPv6

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Local Mobility Anchor

Mobile Access Gateway

Mobile Node

- **FE_I**: Ingress for DMM indirection
- **FE_E**: DMM Egress Function
- **FE_IEC**: Control to establish states for DMM indirection
- **FE_MCTX**: Function to establish existing MN context in new mobility anchor

Interface between FEs
Existing vs. DMM Functional Entities

Mobile IPv6

**FE_R**

**FE_MA_U**

**FE_MA_C**

**FE_MU_U**

**FE_MU_C**

**FE_I**

**FE_E**

**FE_IEC**

**FE_MCTX**

**BU**

**BA**

**FE_I**: Ingress for DMM indirection

**FE_E**: DMM Egress Function

**FE_IEC**: Control to establish states for DMM indirection

**FE_MCTX**: Function to establish existing MN context in new mobility anchor

Interface between FEs
DMM design constraints

• Given Fact:
  Design constraints have impact to the DMM solution
  – Transparency of DMM to MN
  – Simultaneous handling of multiple IP addresses at MN
  – Multiple vs. Single Mobility Anchor at a time

• Consequence:
  Not all identified DMM Functional Entities may be required

• So far two approaches exists for indirection
  – Forwarding/tunneling from previous anchor through new anchor
  – Indirection above anchor level
Anchor Centric Model – Mobile IPv6

Home Agent interaction to set up DMM indirection
MN Centric Model – Mobile IPv6

Mobile Node coordinates indirection

Example
Distributed Model – Mobile IPv6 U/C-Plane Split

Extended Home Agent Control Function enables DMM indirection

Router in transport network

Home Agent Control Function

previous Home Agent User Function

current Home Agent User Function

Mobile Node
Concluding & Next

• DMM analysis and specification of extensions should be done on a functional level
• Enables gap analysis and specification beyond mobility protocol level
• Applicable to current analysis drafts and their methodology
  – top-down / bottom-up

• If DMM WG concludes to focus solely on IP Mobility based solutions, consider hooks for external support according to these DMM Functional Entities and reference points
  – Keep DMM solution extensible
  – Keep DMM solution deployable