DMM Framework and Analysis based on Functional Elements

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Document history

• -00 presented in Atlanta
• Changes in version 01:
  – Included Mobile Node C-/U-Plane functions to the set of available functions where DMM functions can be added
  – Added uplink routing considerations
  – Added examples about how to use the framework for a gap analysis and for the design of optimized DMM solutions
  – Positioning of a Multicast framework to be discussed with the WG
  – Clearer structure with framework as document core and valuable applications of the framework in the appendix
Motivation and Methodology

• Define Protocol agnostic **Functional Framework** for DMM specification and analysis
  – can apply to solutions that are solely based on existing IP mobility protocols
  – can apply to solutions which get support from non mobility protocols

• Define specific DMM Functional Entities
  – Keep these functions decoupled from IP mobility management protocols, but complementary

• Apply DMM Functional Entities to architecture components of existing architectures & associated protocols
  – DMM FEs expected to be added to existing mobility and network functions
Existing and DMM functional entities

- **Existing functional entities:**
  
  - FE_MA_C: FE Mobility Anchor, Control Plane
  - FE_MA_U: FE Mobility Anchor, User Plane
  - FE_MU_C: FE Mobile User Client, Control Plane
  - FE_MU_U: FE Mobile User Client, User Plane
  - FE_R: FE of a standard IP Router/Switch

- **4 Specific DMM functions:**
  
  - 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 MN mobility context
Application

• A DMM FE may be accomplished by an existing protocol or an extension to an existing protocol

• Not all identified DMM Functional Entities may be required
  – Depends on the target level of optimization (e.g. routing) and requirements (e.g. host modification)
Mobility Protocol Centric Solutions

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

Mobile Node coordinates indirection

Example
Conclusions

• DMM analysis and specification of extensions should be done on a functional level

• Proposed functional framework enables analysis and specification beyond mobility protocol level
  – Keep DMM solution extensible and deployable
Next Steps

• DMM Unicast Framework considered mature
  – Further feedback appreciated

• Solicit feedback to the DMM Multicast Framework
  – How to position the DMM Multicast Framework?

• Adopt this framework in the DMM WG?