Client and Network based solutions for Distributed Mobility Management

draft-bernardos-dmm-cmip-00
draft-bernardos-dmm-pmip-02

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Berlin, DMM WG, 2013-08-01
Extending existing protocols…

• **Client Mobile IP (host) based**
  
  • Fabio Giust, Antonio de la Oliva, Carlos J. Bernardos, “Flat Access and Mobility Architecture: an IPv6 Distributed Client Mobility Management Solution”, 3rd IEEE International Workshop on Mobility Management in the Networks of the Future World (Mobiworld 2011) at INFOCOM 11
  
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• **Proxy Mobile IP (network) based**
  
  • Fabio Giust, Antonio de la Oliva, Carlos J. Bernardos, Rui Costa, “A Network-based Localized Mobility Solution for Distributed Mobility Management”, International Workshop on Mobility Management for Flat Networks (MMFN 2011) at WPMC 11
  
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Client-based solution

- Flat Access and Mobility Architecture (FAMA)
- Re-uses existing approaches
  - Mobile IPv6 : RFC 6275
  - Authorizing MIPv6 BU with CGAs: draft-laganier-mext-cga
- Mobility management pushed to the edge of the network
  - The HA is deployed at the access router level
Entities

• Distributed Anchor Router (DAR)
  • Deployed in the MN’s default gateway
    • First hop router
  • It assigns a topologically valid address to MNs
  • An on-link MN can send/receive traffic using the address from the DAR
    • DAR forwards such packets as a plain router
  • A DAR anchors the address it assigned when the MN is not on-link (HA role)
    • The MN’s address is reachable through a bi-directional IP tunnel
Operations (i)

• When the MN moves to a new DAR, it can keep the old address reachability by notifying the corresponding DAR with a BU
Operations (ii)

- The address configured at the new DAR is used for new sessions
- Old sessions are redirected through the IP tunnel
Net-based DMM solution

- Network based DMM approach
  - Based on Proxy Mobile IPv6
- Mobility management pushed to the edge
  - Access router level
- Partially distributed solution
  - Centralized control plane kind-of LMA
    - A central node stores the mobility sessions of all the MNs
  - Distributed data plane
    - Only the edge routers handle the data forwarding
Entities

- **Mobility Anchor and Access Router** (MAAR)
  - One IP hop distance from the MN
  - Concentrates AR, LMA and MAG functionalities on a per-MN, per-prefix basis
  - Delegates and anchors an IP prefix to each MN attached
    - Serving MAAR (S-MAAR): MAAR which the MN is currently attached to
    - Anchor MAAR (A-MAAR): previously visited MAAR anchoring a prefix used by an active flow of the MN
  - Forwards data packets to/from IP networks

- **Central Mobility Database** (CMD)
  - Central node storing the BCEs of all the MNs in the domain
  - It plays the role of the LMA for the control plane
  - Not traversed by data packets
Operations: initial registration

- The S-MAAR registers the MN at the CMD through a PBU/PBA handshake
Operations: handover

- 3 operational modes:
  - CMD as PBU/PBA relay
  - CMD as MAAR locator
  - CMD as PBU/PBA proxy
- Conceptually they are similar
  - The difference mainly consists on the message order
- We focus on the “proxy” mode
  - Already implemented
CMD as PBU/PBA proxy

- The CMD receives a PBU from the new S-MAAR announcing the MN attachment
- The CMD sends instructions to the S-MAAR and A-MAAR(s) on how to establish the proper routing configuration
Questions?