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# IP Multicast Use Cases Analysis for PMIPv6- based Distributed Mobility Management

draft-sfigueiredo-multimob-use-case-dmm-02.txt

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# IP multicast & DMM

- Base Solution [RFC6224]
  - IP multicast deployment option specified for multicast listener in Proxy Mobile IPv6 domains without modifying mobility and multicast protocol standards
- Mobile networks are changing towards distributed mobility management
  - Tackling inefficiencies in network management and packet routing
  - Being tried on IETF DMM WG

# Motivation

- Distributed mobility management (DMM) WG
  - “Requirements of distributed mobility management”
  - draft-ietf-dmm-requirements-01, July 12, 2012
- Worthy to look at the applicability of Base Solution on DMM
  - Identifying possible use cases
  - Finding out corresponding problems
  - Before “Problem Statement”

# Distributed Mobility Management

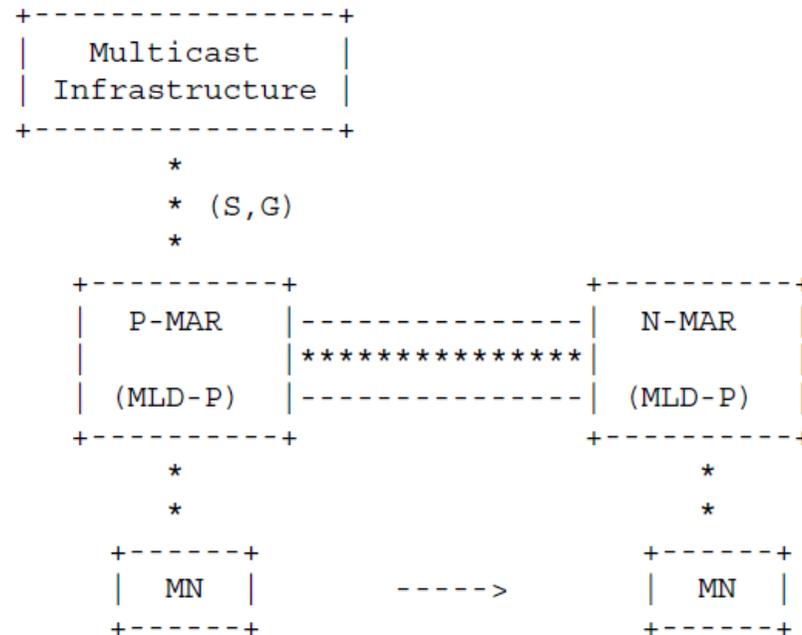
- DMM Requirements
  - REQ1: Distributed deployment
  - “IP mobility, network access and routing solutions provided by DMM MUST enable a distributed deployment of mobility management of IP sessions so that the traffic can be routed in an optimal manner without traversing centrally deployed mobility anchors.”
  - **Mobility anchor is assumed to be placed on access routers**

# DMM Multicast Use Cases

- Network-based DMM is initially considered to be examined
  - Base Solution was specified on network-based PMIPv6
- Deployment of mobility functions
  - MAG and LMA functionalities are placed on an access router
  - Each flow has its anchor, where a HNP of each flow was initiated
- MLD Proxy is installed in every access router
  - The MAG has MLD Proxy only in Base Solution
- Multicast listener and sender cases included

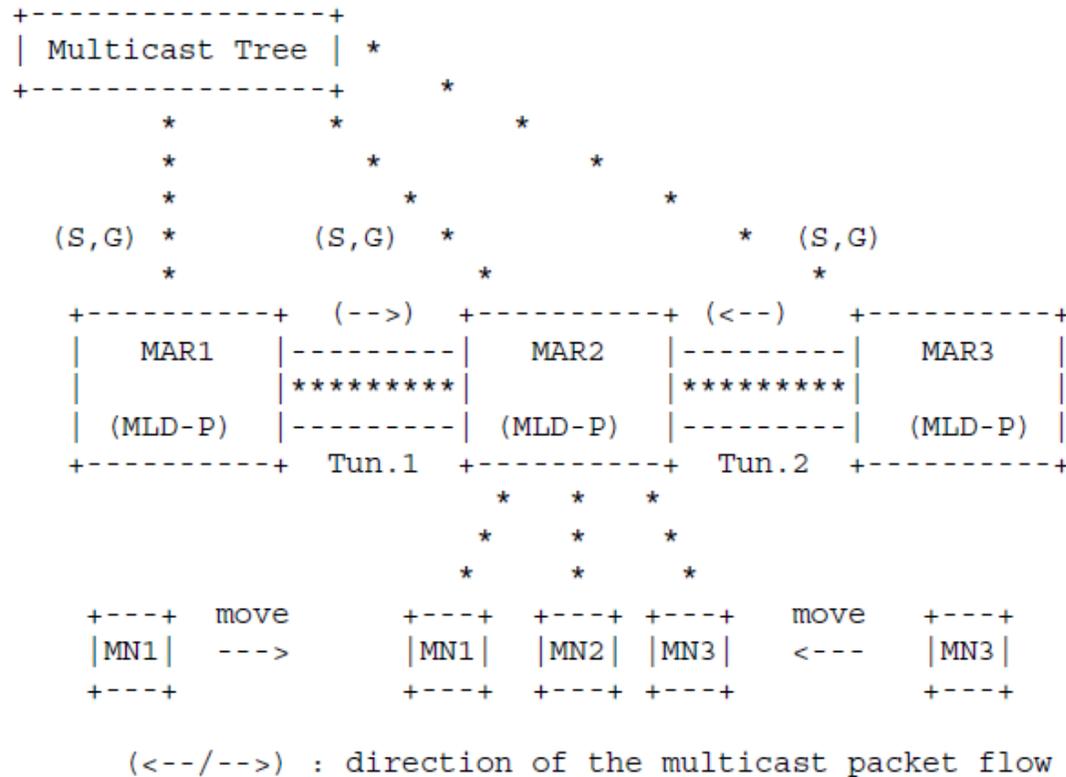
# Use case for multicast listener

- Access router is called as mobility access router (MAR) in here
- A MAR may receive IP multicast packets from multicast infrastructure or other MAR
- MLD upstream interface can be setup towards multicast infrastructure or its anchor depending on IP mobility session state



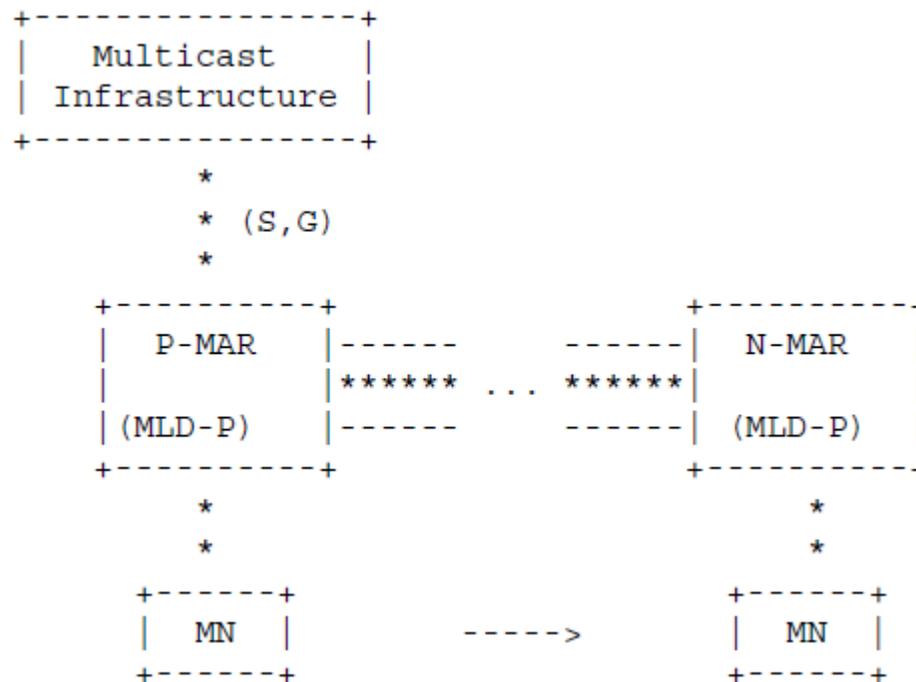
# Problem in use case

- Multicast data replication
  - Similar to tunnel convergence problem introduced in PMIPv6 Base Solution



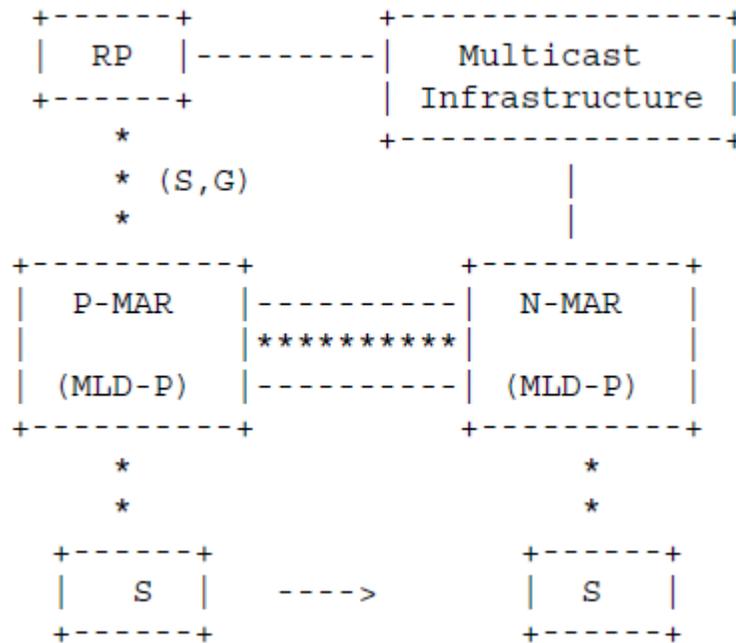
# Problem in use case

- Non-optimal routing
  - Multicast packets may traverse a long distance in DMM domain



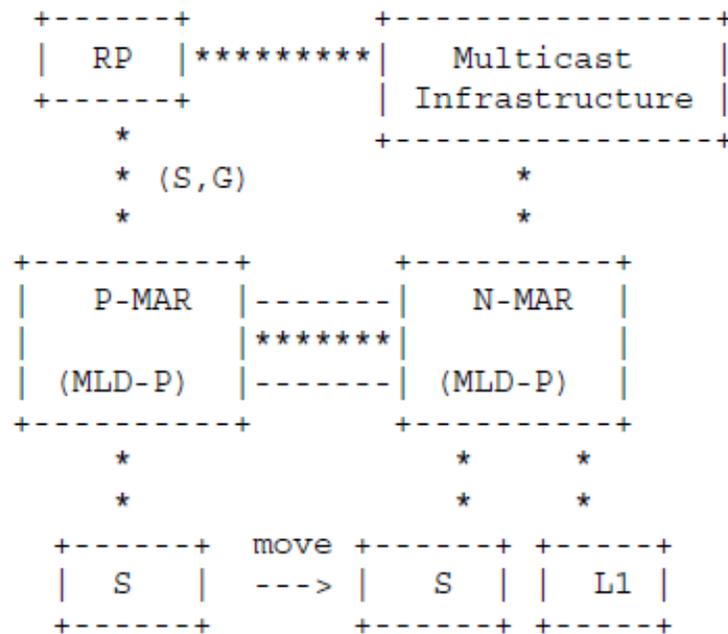
# Use case for multicast sender

- MLD Proxy is placed on a MAR
- Upstream interface of MLD Proxy for multicast source is set up towards a multicast router



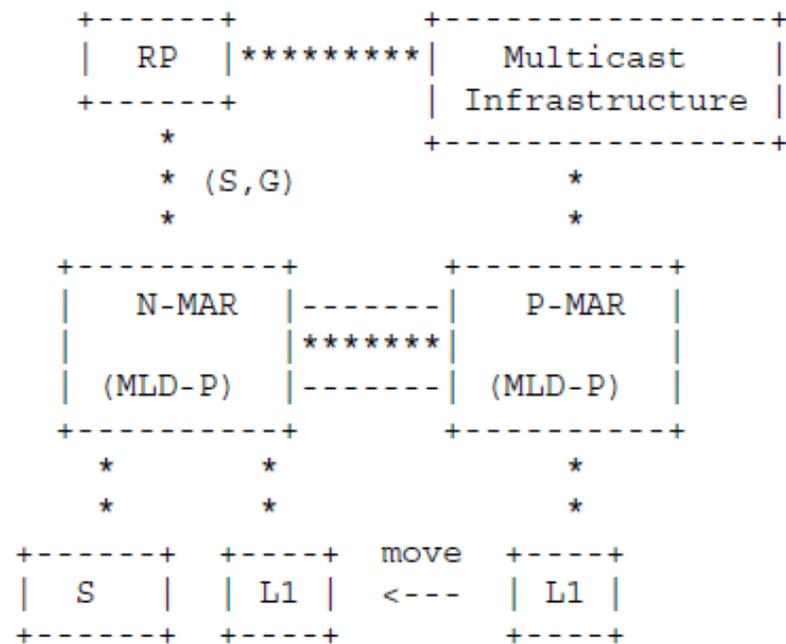
# Problem in use case

- Triangular routing after sender mobility
- Flow of multicast data (source's movement)
  - Source -> N-MAR-> P-MAR -> Multicast Tree -> N-MAR -> L1



# Problem in use case

- Flow of multicast data (listener's movement)
  - Source -> MAR1 -> MAR2 -> Multicast Tree -> MAR2 -> MAR3





## Next update & issue

- SSM will be examined in multicast source
- Problems need to be identified with various perspectives
- We're considering do we need to have additional use cases beyond the scope of Base Solution

## Q & A

- Work interested to MULTIMOB?
- Your contributions and comments would be welcomed

