Distributed Mobility Management Framework draft-chan-dmm-framework

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DMM framework

- Numerous approaches to centralized as well as distributed mobility management exist.
- A view to look at the commonalities between different approaches in mobility management
  - from centralized to distributed mobility management
  - from host-based to network-based mobility management
- A common class of logical functions can be reconfigured to achieve different DMM solutions.

Unified formulation of Internet mobility standards

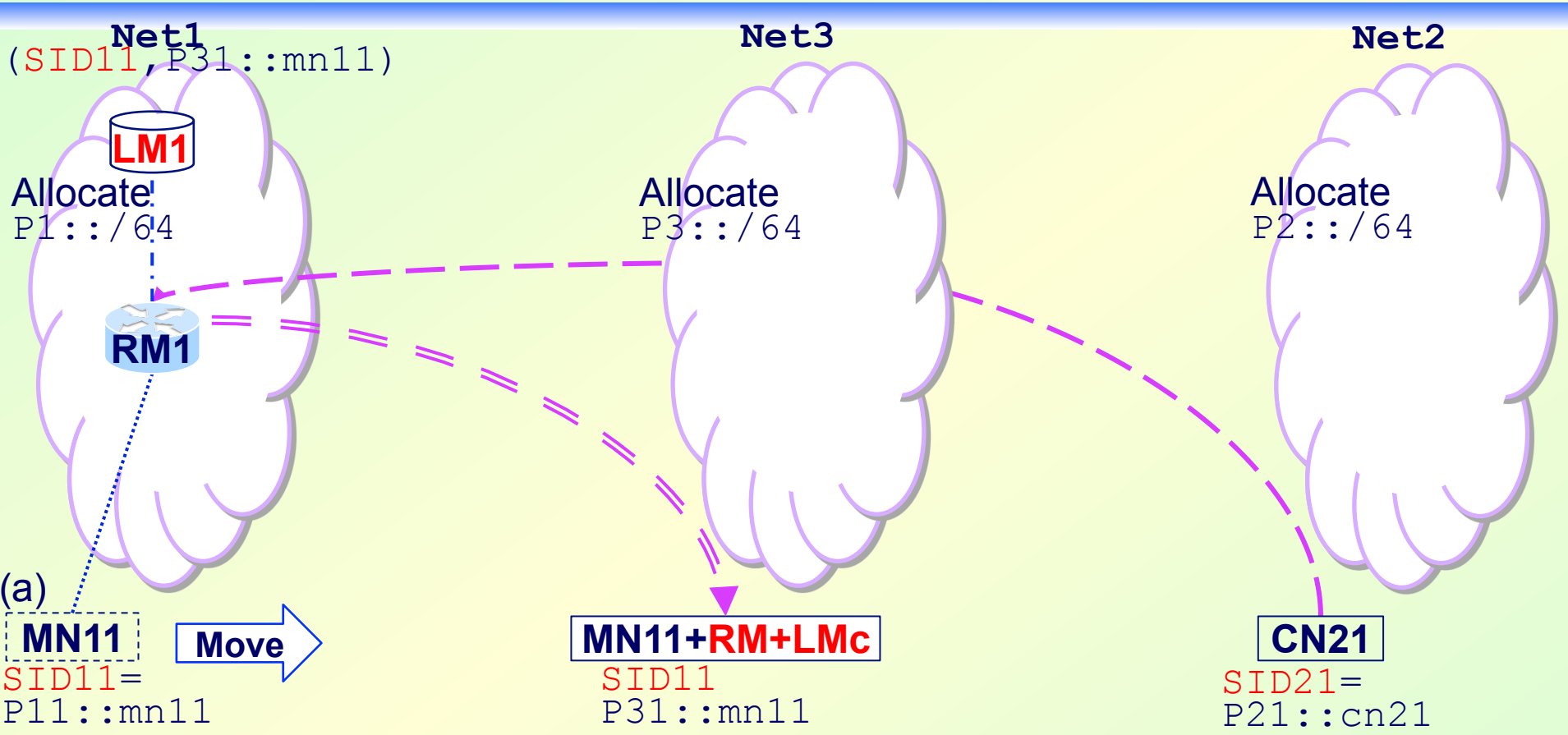
3 Basic Internet Functions

- 1. allocates IP prefixes or addresses are to the hosts.
- 2. manages information such as in maintaining DNS database system and in exchanging routing information between routers.
- 3. Router forwards packets using appropriate information in the routing table

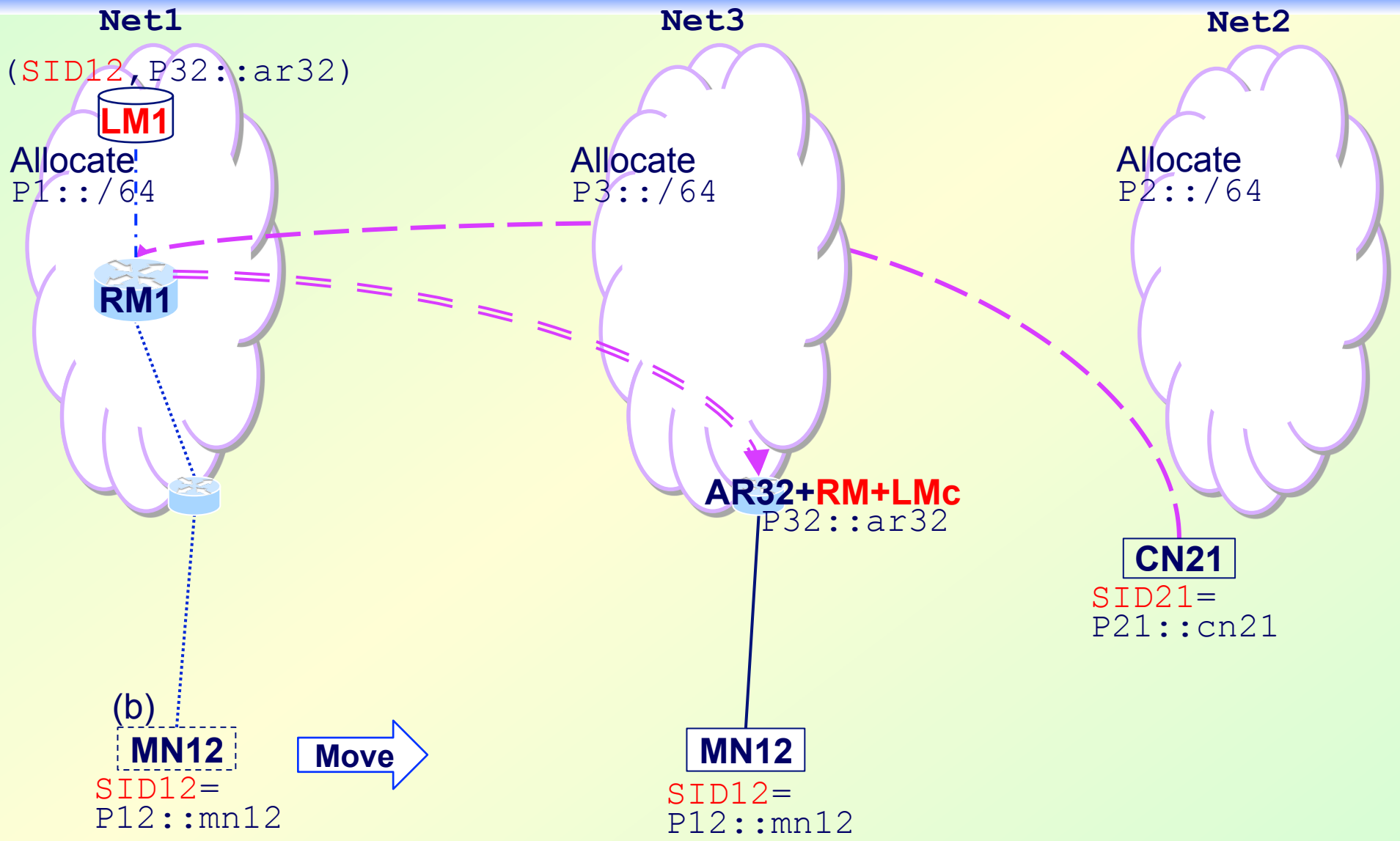
3 Basic Mobility Management Functions

- 1. Session identification
- 2. Location management (LM)
  - LMs server; LMc client
- 3. Routing Management (RM)

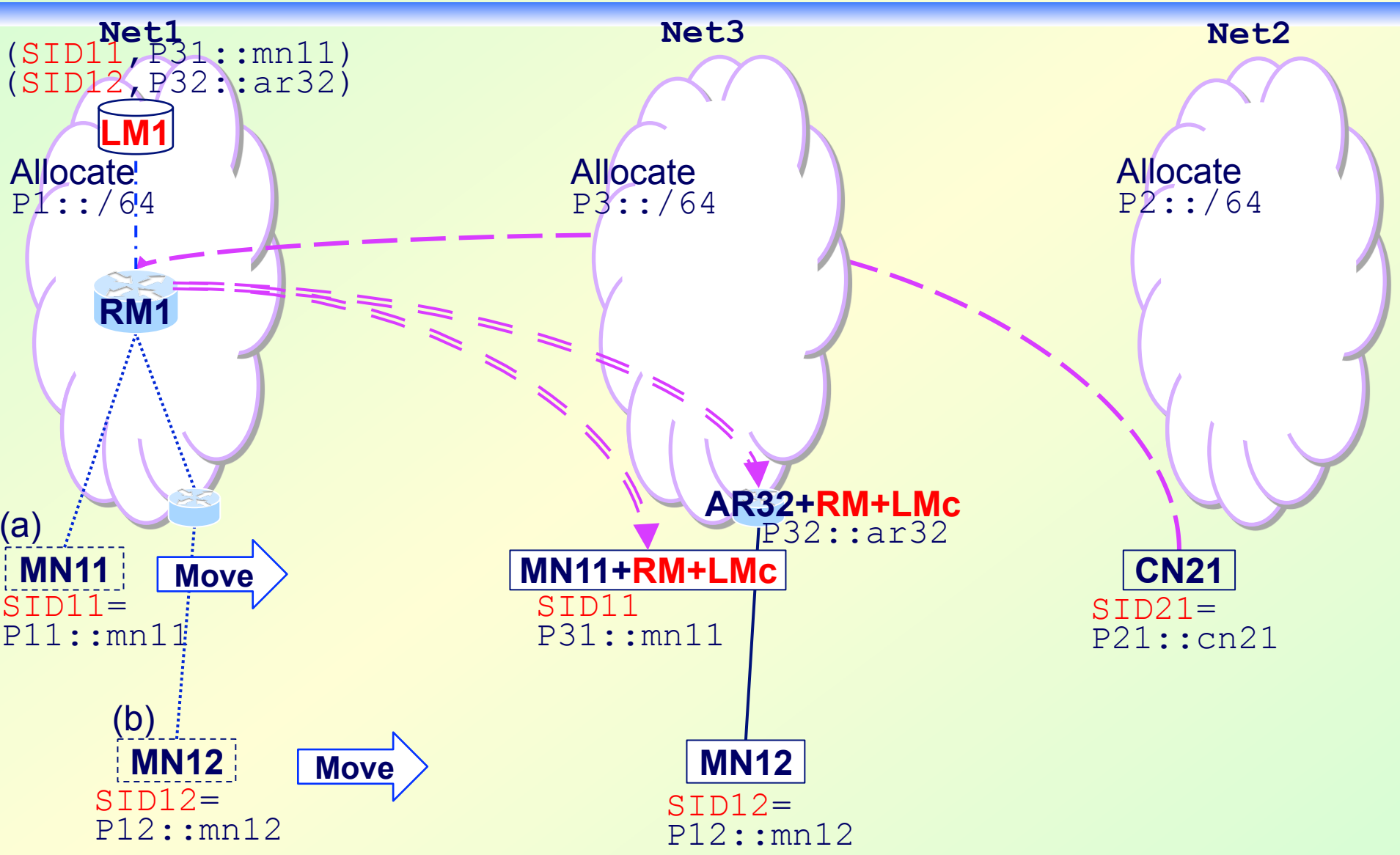
Existing protocol: MIPv6



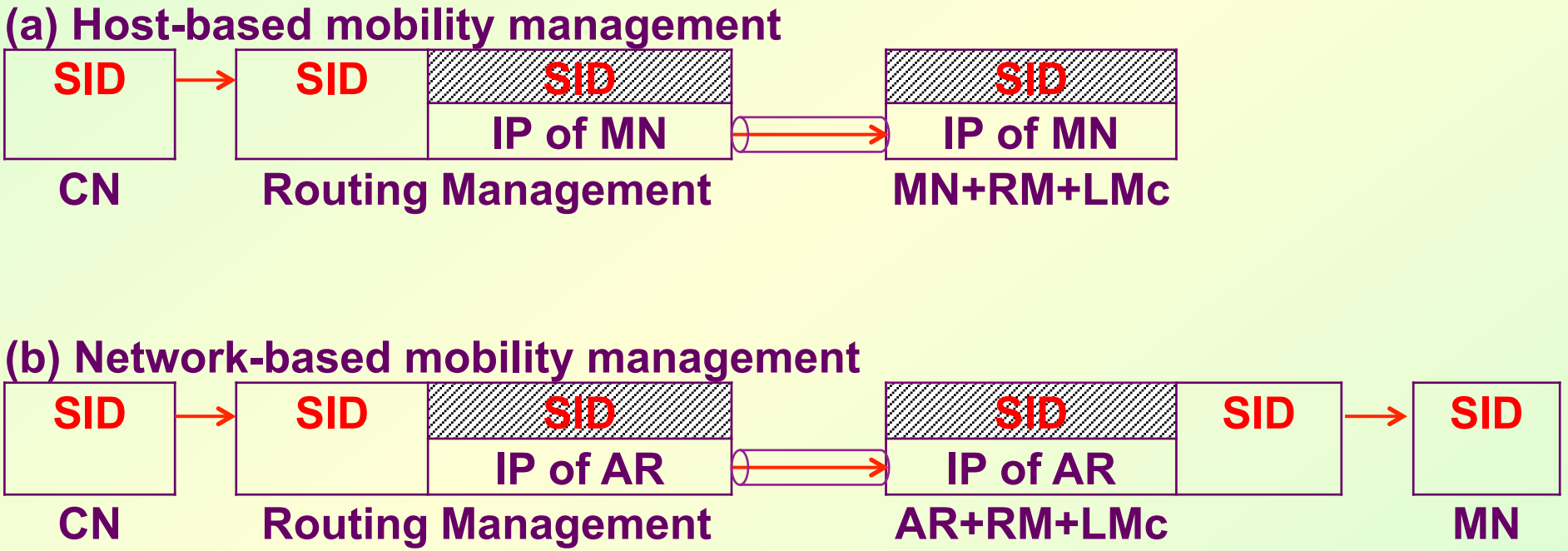
Existing protocol: PMIPv6



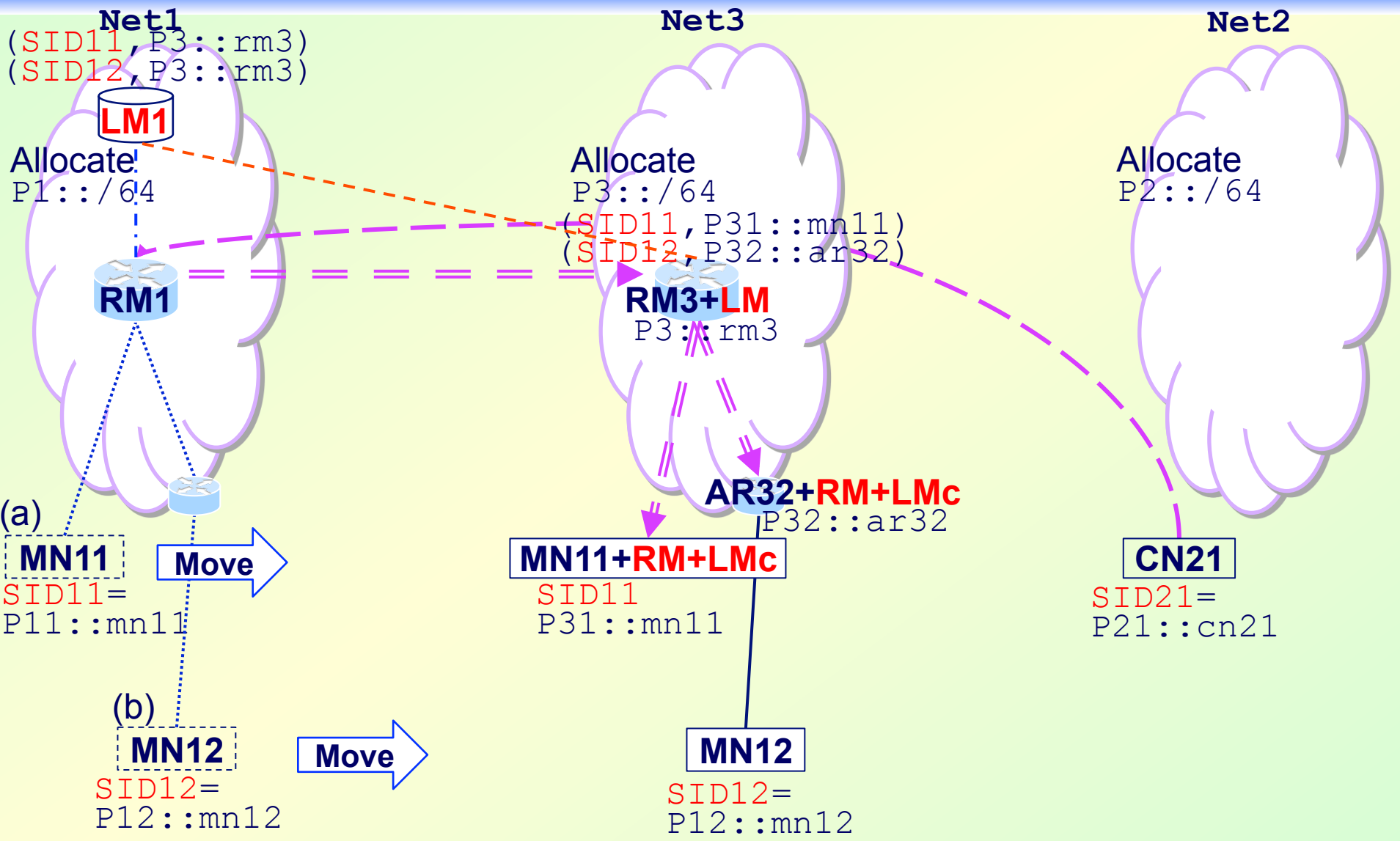
MIPv6/PMIPv6



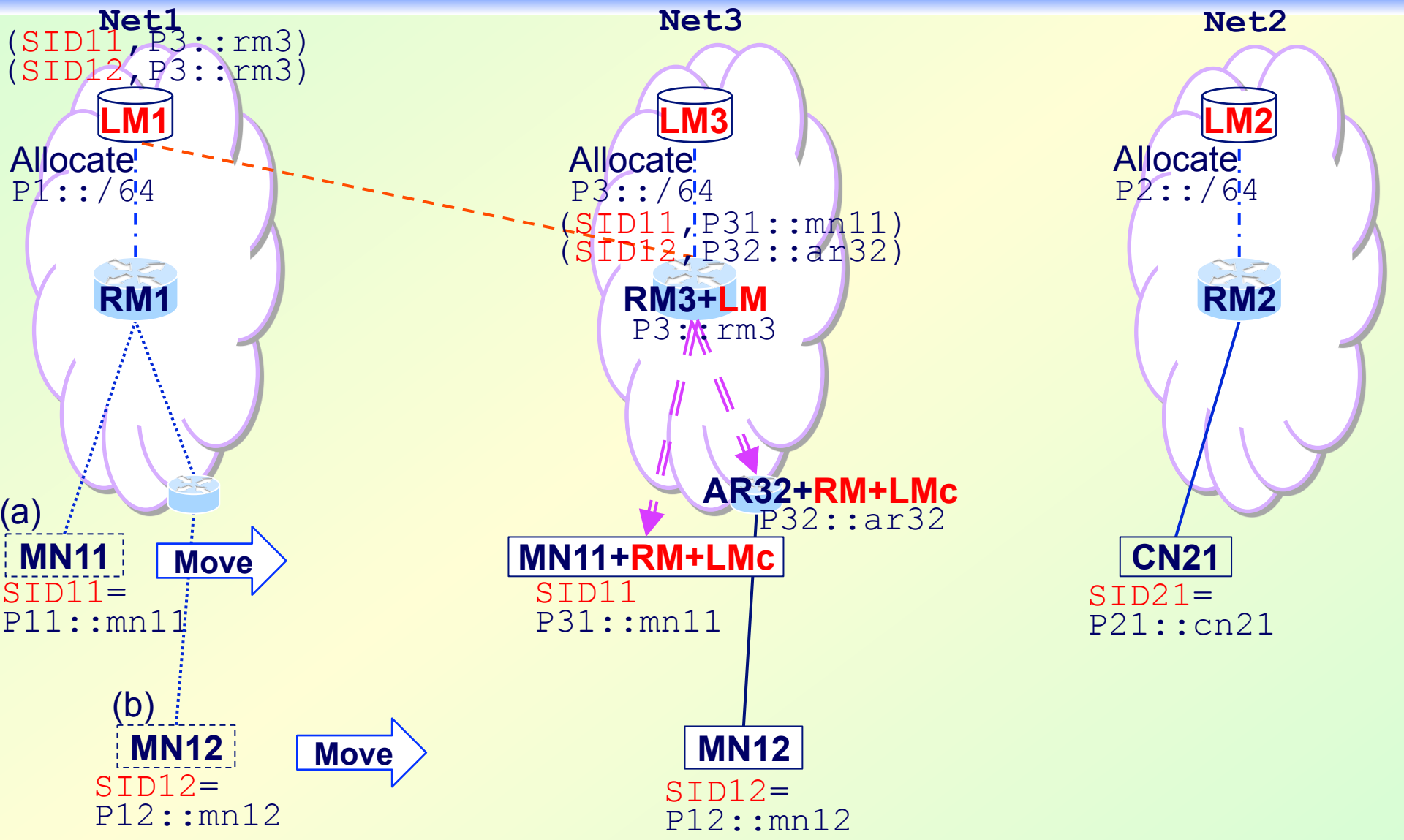
Host- vs Network-based mobility management



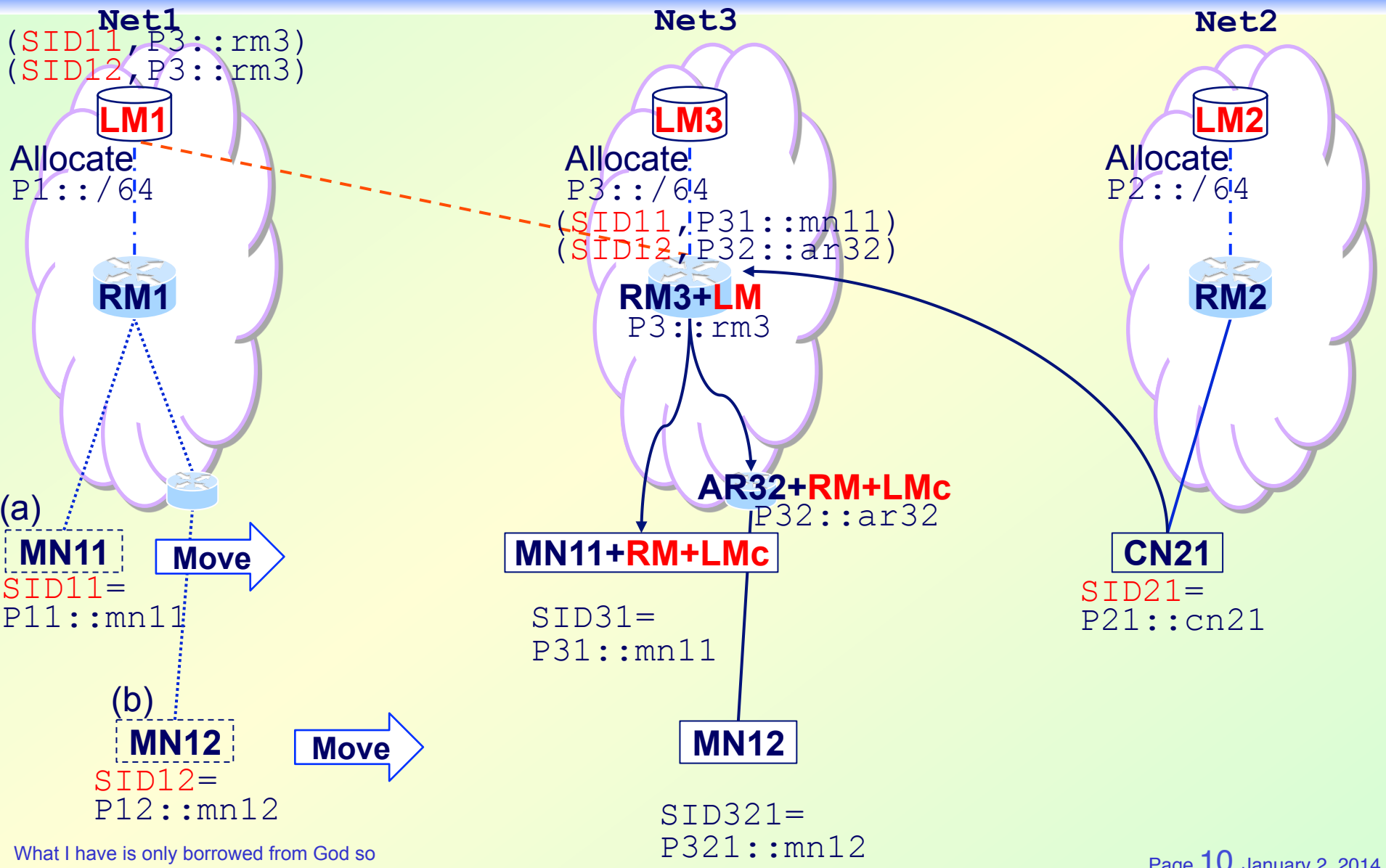
Hierarchical



Deploying MM in each network



Selective mobility support
without ongoing application requiring session continuity



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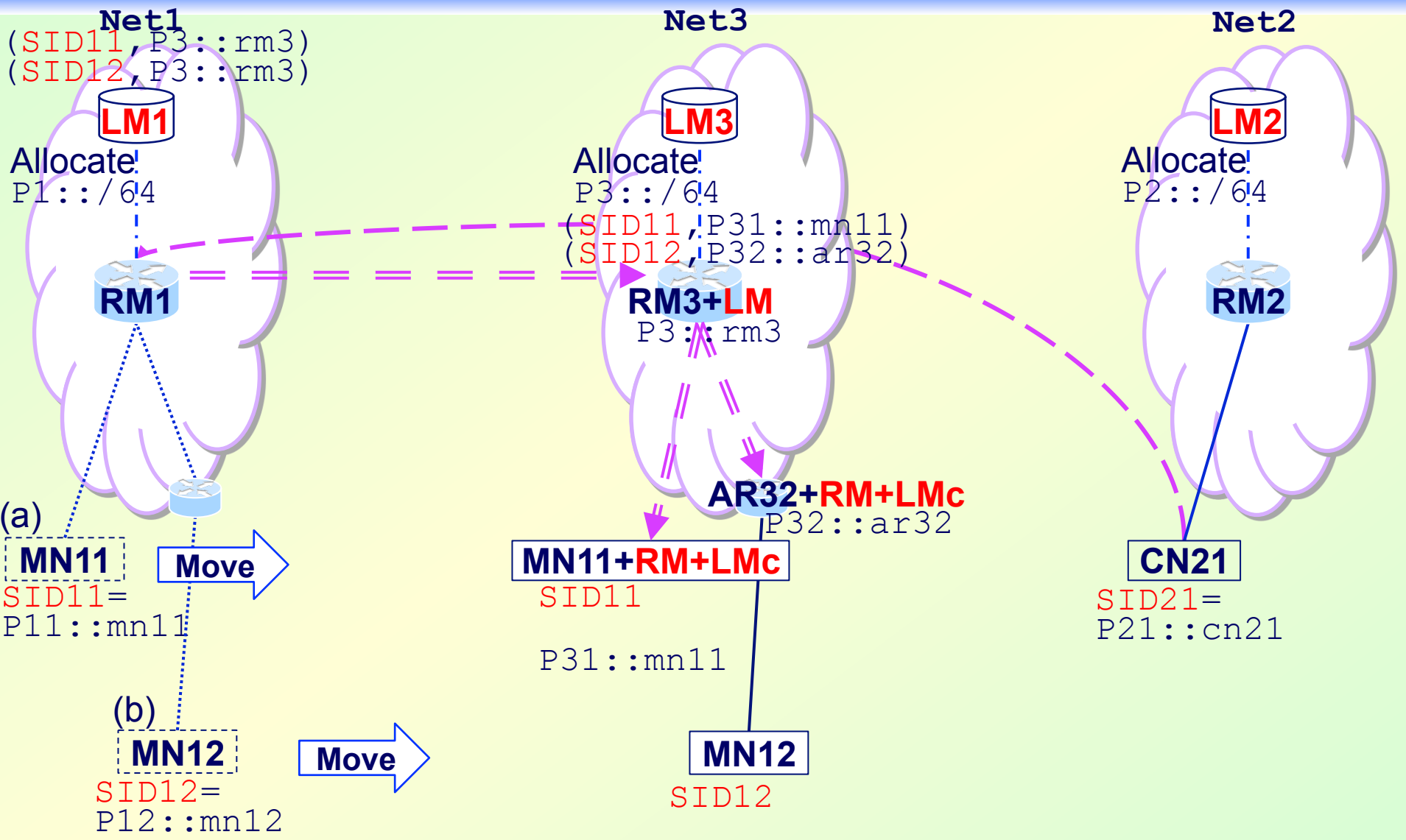
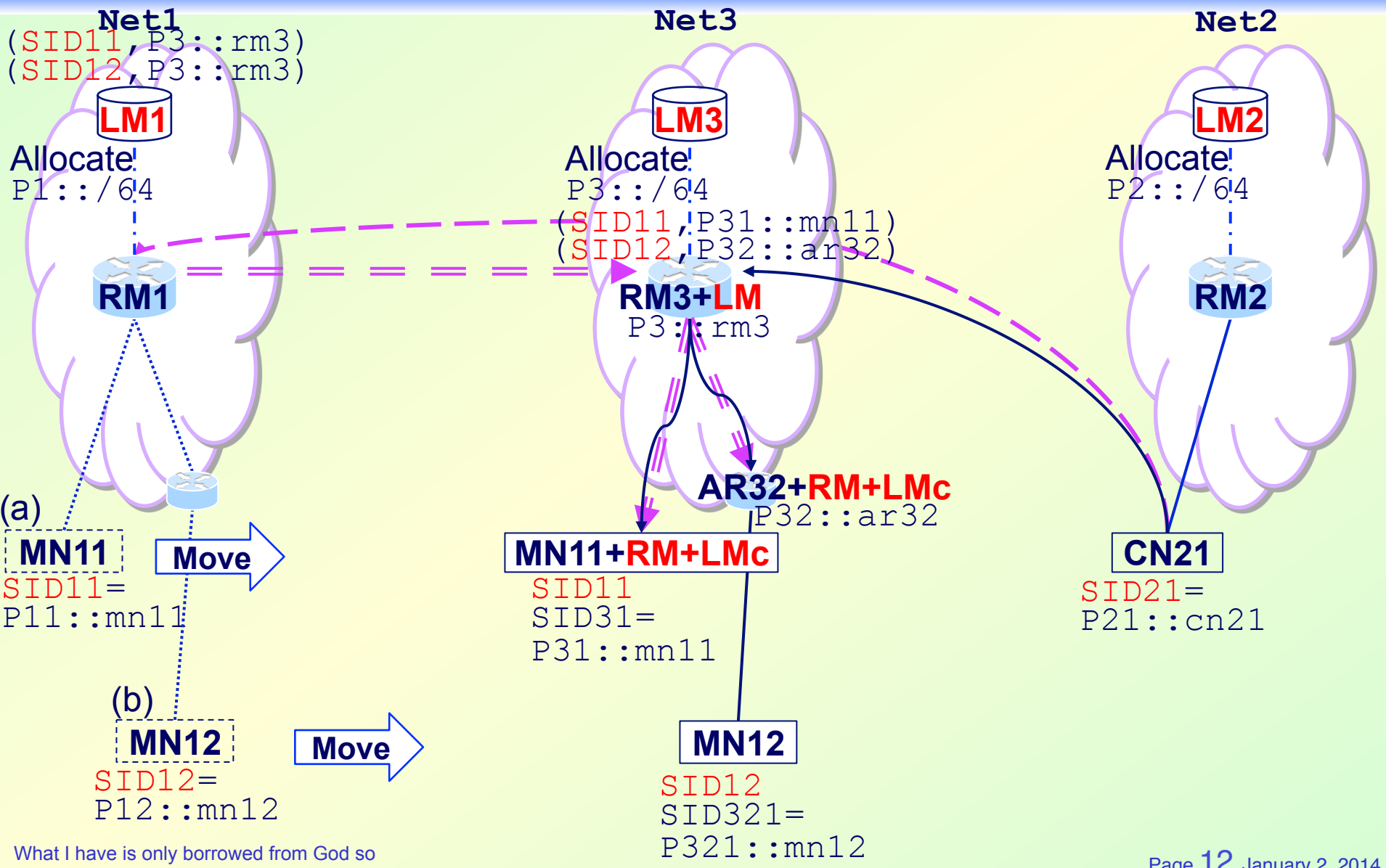


Selective mobility support



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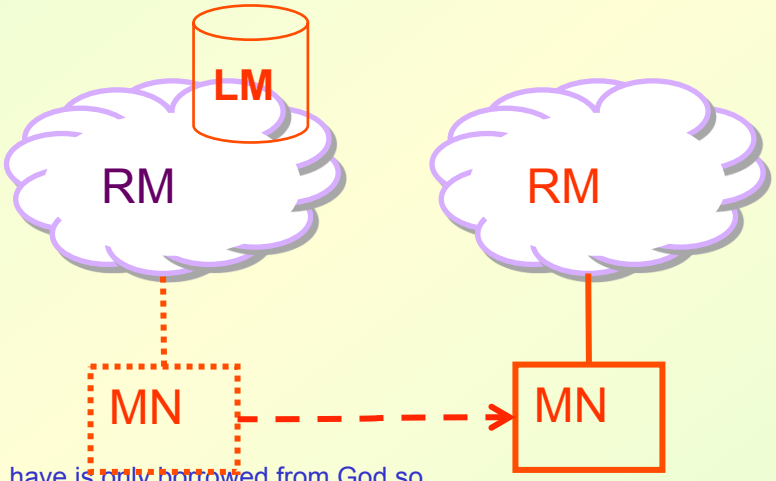
Distributed mobility anchors-Architecture

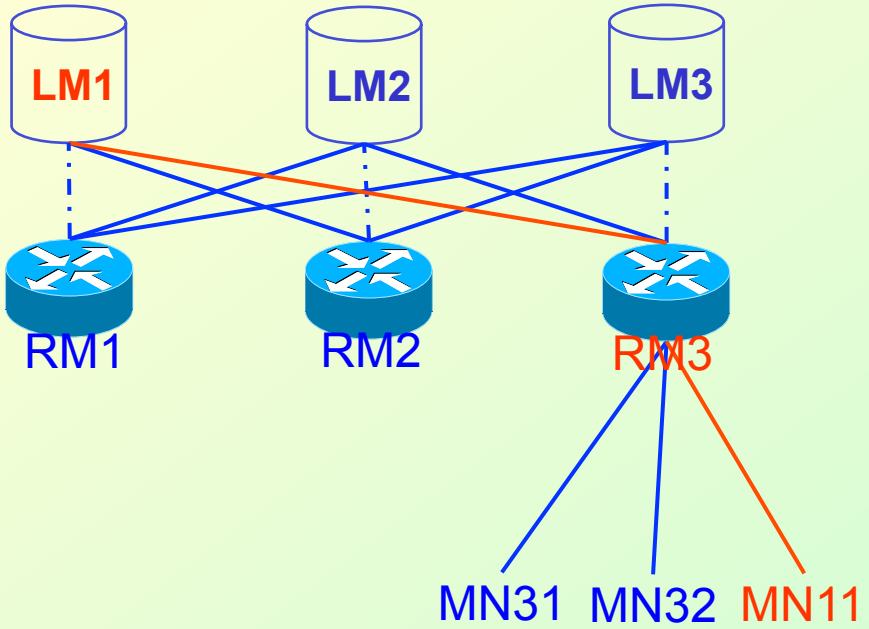
RM: Routing Management function (data plane)

- RM in every network

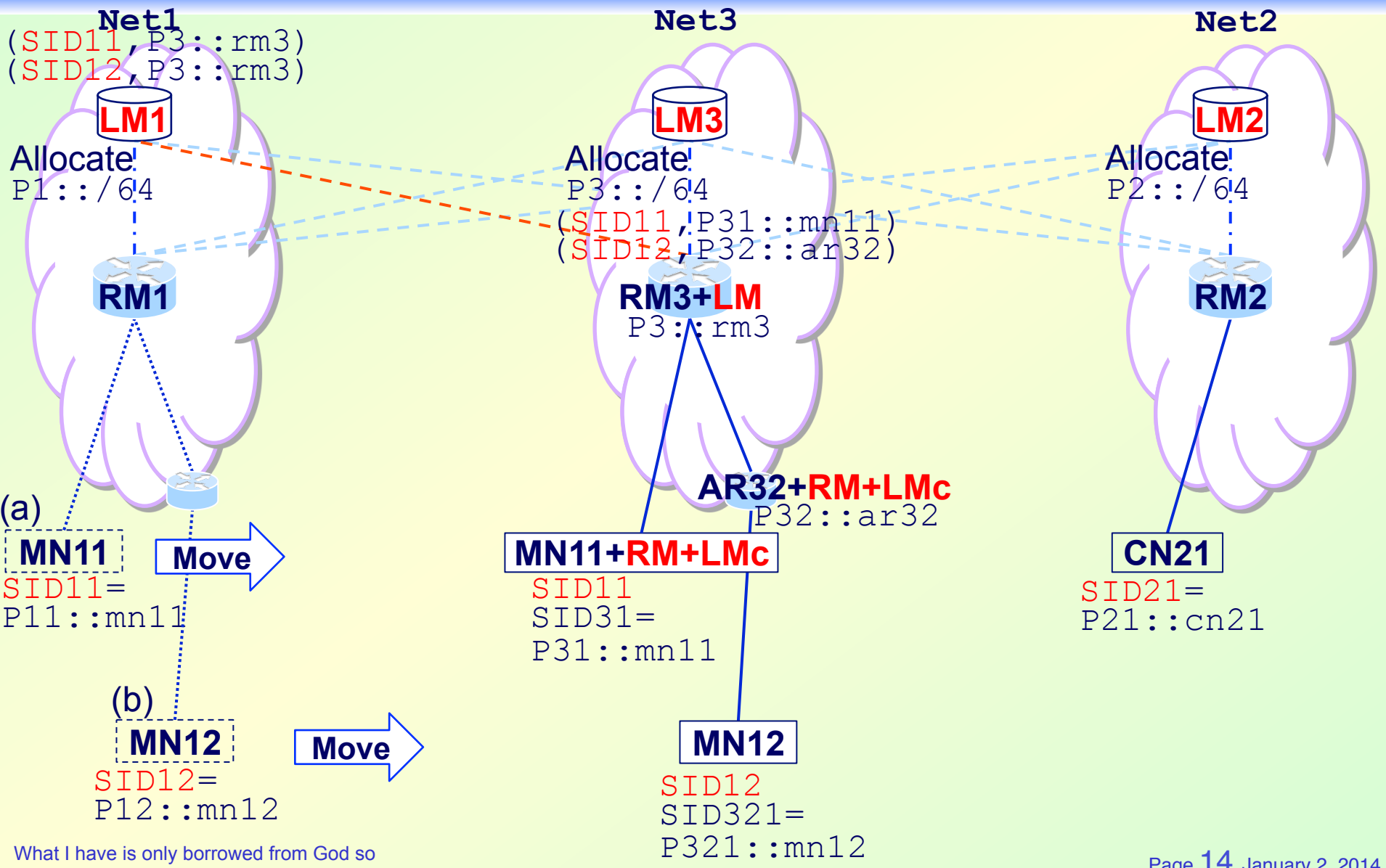
Location Management function (control plane)

- LM is supported by distributed database





DMM



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Comparing framework against DMM requirements

REQ1: Distributed processing

- The framework has defined a set of mm functions which can be implemented in a distributed fashion.
- As further evidence, the document explains how the mm functions can be used to implement in a distributed manner the major mm protocols (MIPv6, PMIPv6, HMIP, DMA, MHA).

REQ2: Transparency to upper layers when needed

- In the framework, transparency depends on how the MR functions is implemented. This draft has already shown that using the framework one can express, for example, PMIP and DMA, which are transparent to the upper layers.

REQ3: IPv6 deployment

- The framework is not tied to a particular IP version, and therefore supports IPv6 deployment..

REQ4: Existing mobility protocols

- This draft has already described how to express the functionality of several mm protocols (MIPv6, PMIPv6, HMIP, DMA, MHA).
- More cases can be added as feedback from the WG is received.

REQ5: Co-existence

- The framework enables the expression of existing protocols in functions that can be extended to provide distributed mobility support, and can be made backwards compatible with existing implementations.

REQ6: Security considerations

- Security risks are associated with the particular DMM solution.
- The framework is flexible and does not restrict DMM solutions in a way that the DMM solution can increase security risks..

REQ7: Multicast

- It appears possible to extend the framework by decomposing multimob solutions with the framework.

Comments and suggestions are welcome

Thank you