

NETLMM WG Status and NETLMM Protocol Overview

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NETLMM Work Items

- WG Charter:
 - <http://www.ietf.org/html.charters/netlmm-charter.html>
- Work Items
 - Problem Status Document (Informational – submitted to IESG)
 - Requirements Document (Informational – in follow-up working group last call until 23 June)
 - Protocol Design Document (First version published, available here: <http://www.geocities.com/kemp42/draft-giaretta-netlmm-dt-protocol-00.txt>)
 - MN/AR Interface Document (Informational – in progress)
 - Threat Model Document (Information – in progress)

Protocol Document Timeline

- Design team formed 1 February, 2006
 - Gerardo Giaretta, Telecom Italia
 - Kent Leung, Cisco
 - Henrik Levkowitz, Ericsson
 - Marco Liebsch, NEC
 - Katsutoshi Nishida, NTT
 - Mohan Parthasarathy, Nokia
 - Phil Roberts, Motorola
 - Hidetoshi Yokota, KDDI
- Requirements discussion continued through March, 2006
- Design team face-to-face meetings
 - Week of 7 March, 2006 at IETF65
 - Week of 22 May, 2006 at TILabs, Turin
- First protocol document published: 19 June, 2006

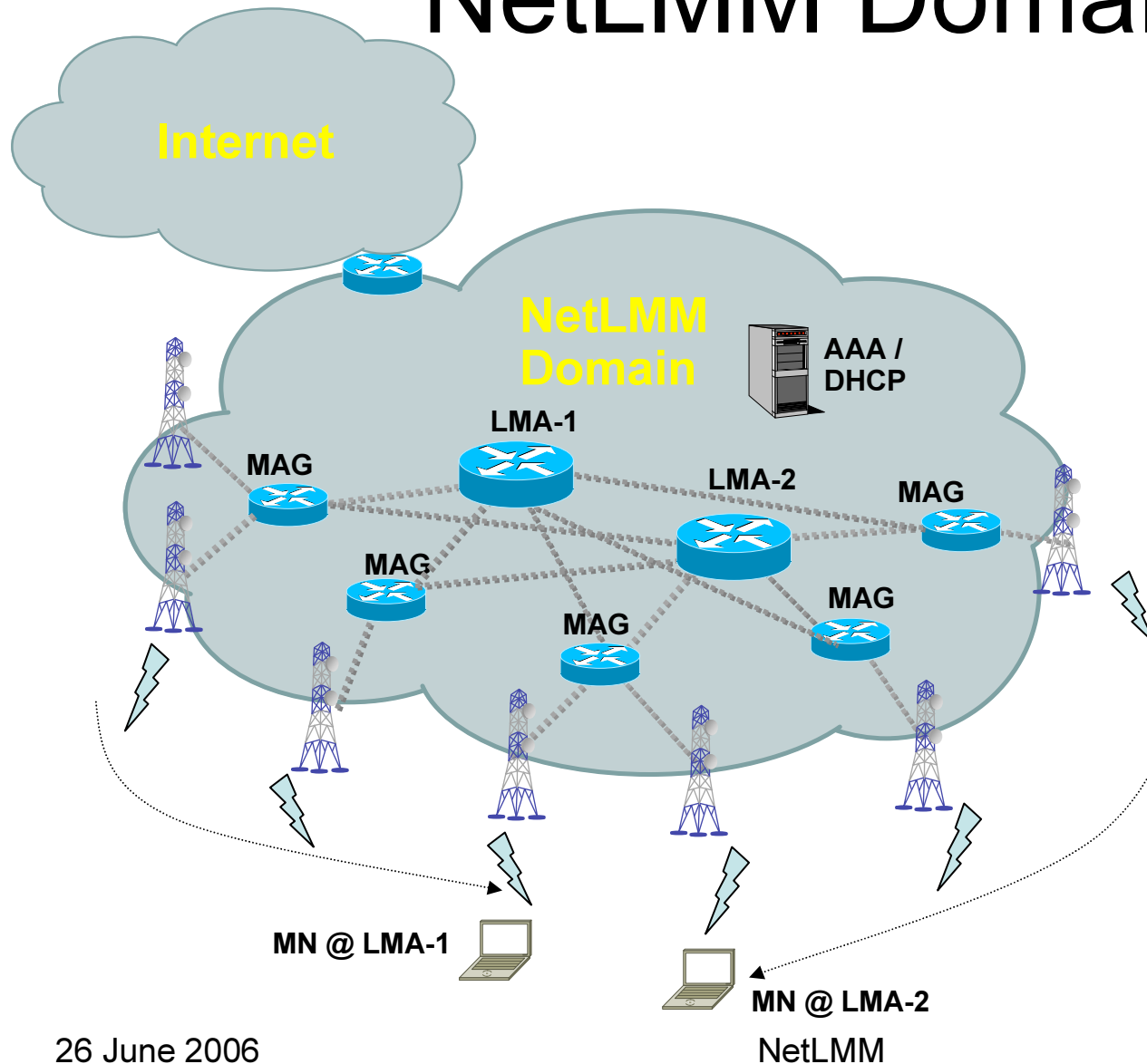
Protocol Document Expectations

- Deliverables from NETLMM WG Charter
 - October 2006 Working Group Last Call on Protocol Document
 - December 2006 Protocol Submitted to IESG for publication
- Best of all possible worlds:
 - First draft is enormous success
 - WG loves it
 - Last call issued after IETF 66 in July
 - Not that likely
- Worst of all possible worlds:
 - Protocol is a failure
 - Design team missed a crucial component OR
 - Uprising from folks with an alternative approach to solving the same problem
 - WG drags on for months
 - Not that likely
- To accelerate process:
 - Clear discussion about real deployment scenarios
 - Folks contributing to the process (workers to move it along)
 - Input from other SDOs about usage of the protocol to increase priority of the work

NetLMM Overview

- NetLMM Domain
- Terminology
- NetLMM Messages
- Control Message Flows
- Data Flow

NetLMM Domain



- MN has **IP address anchored at LMA**, which advertises the network prefix via routing protocol.
- **Routing** for IP address is established **between MAG and LMA**, the two NetLMM entities serving the MN.
- MN can **move between MAGs** using the **same IP address** for data communications.

Terminology

- NetLMM Address – The invariant IP address on the MN inside the NetLMM domain
- NNP - NetLMM Network Prefix is the IPv6 link prefix of the NetLMM Address
- LMA – Local Mobility Anchor is the function provided by the router which owns the NNP
- MAG – Mobility Access Gateway is the function provided by the Access Router

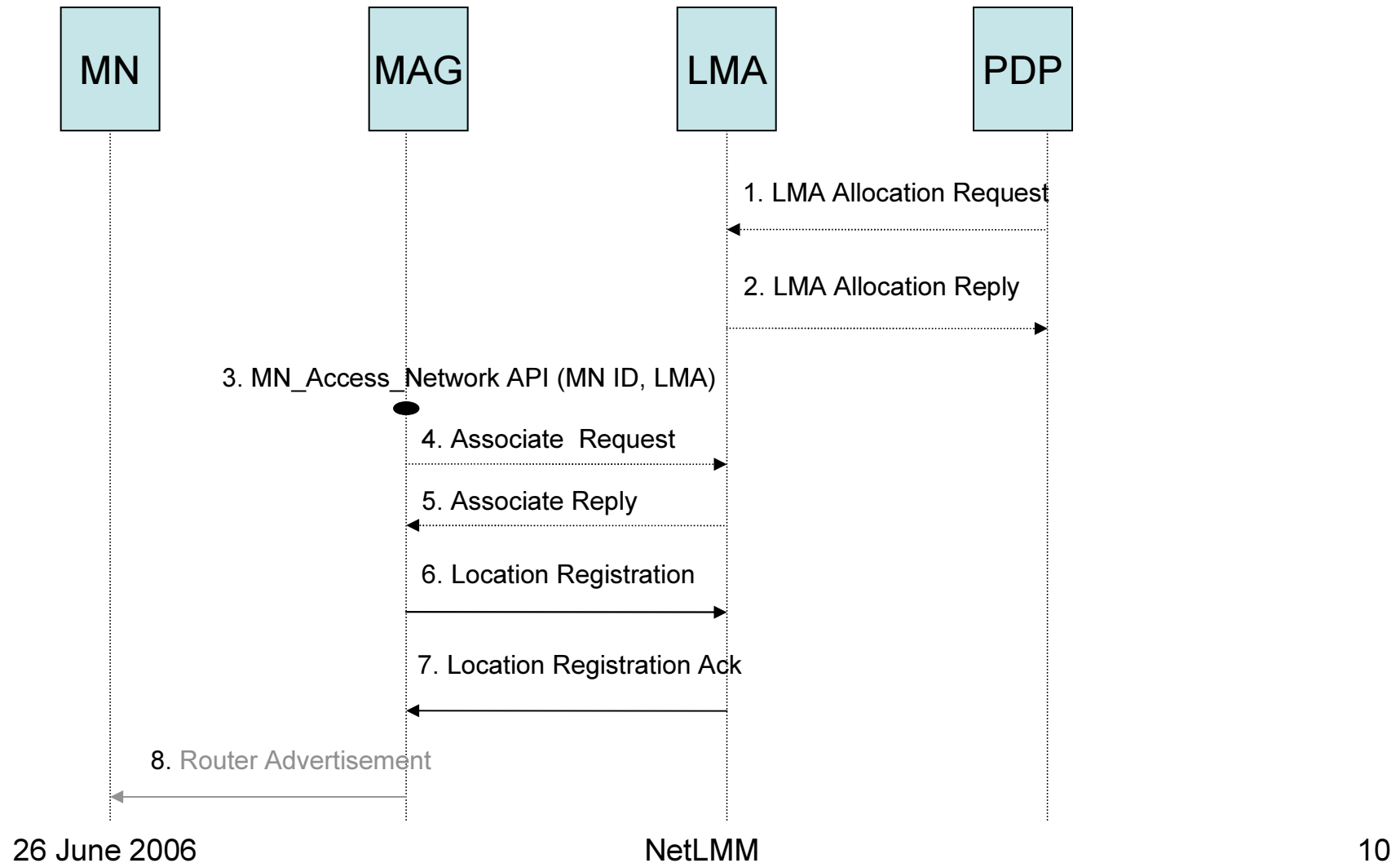
NetLMM Messages

- LMA Allocation Request / Reply
- Associate Request / Reply
- Disassociate Request / Reply
- Location Registration / Ack
- Location Deregistration / Ack
- Routing Setup / Ack
- Routing Remove / Ack
- MN Address Setup / Ack
- MN Address Remove / Ack
- Heartbeat / Ack

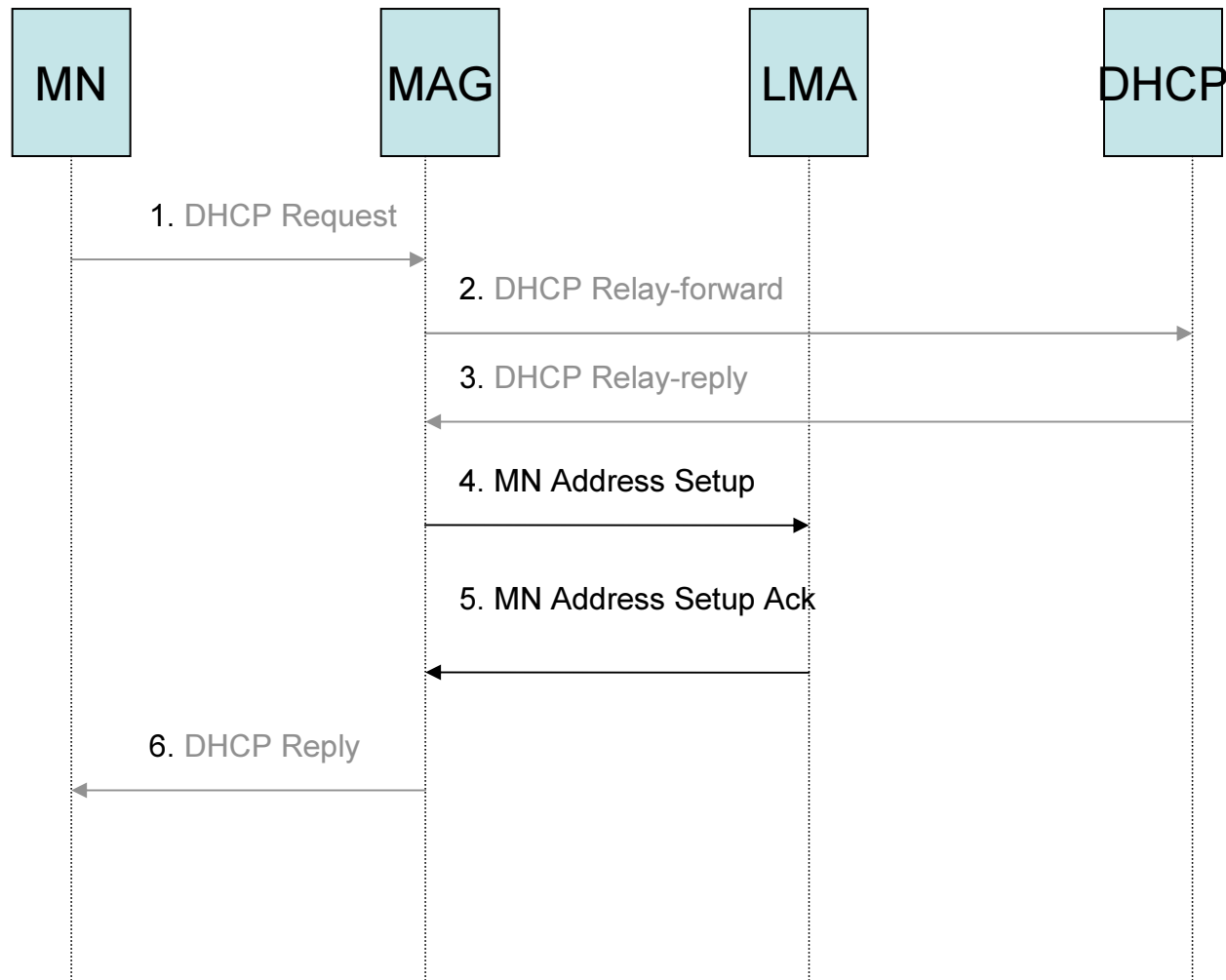
Control Message Flows

- Initial network access
- Stateful address assignment via DHCP
- Stateless address auto-configuration (SLAAC)
- Layer 2 specific address assignment
- MAG to MAG handover
- Network detachment

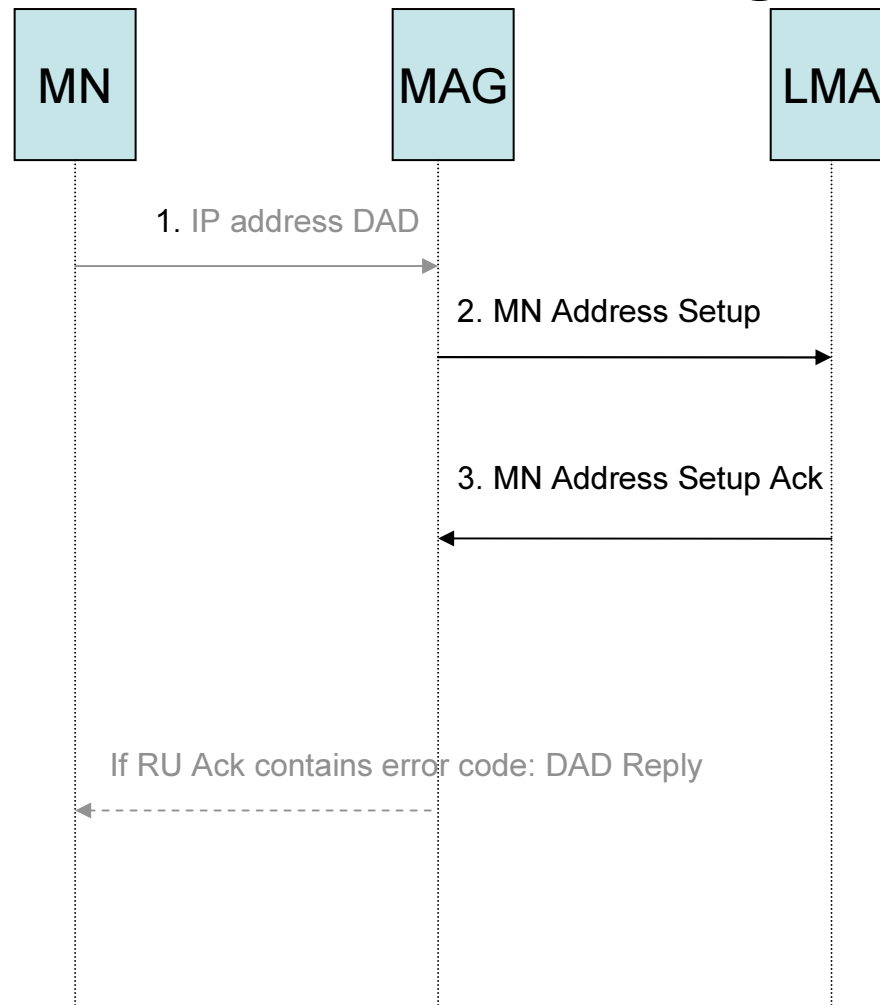
Initial Network Access



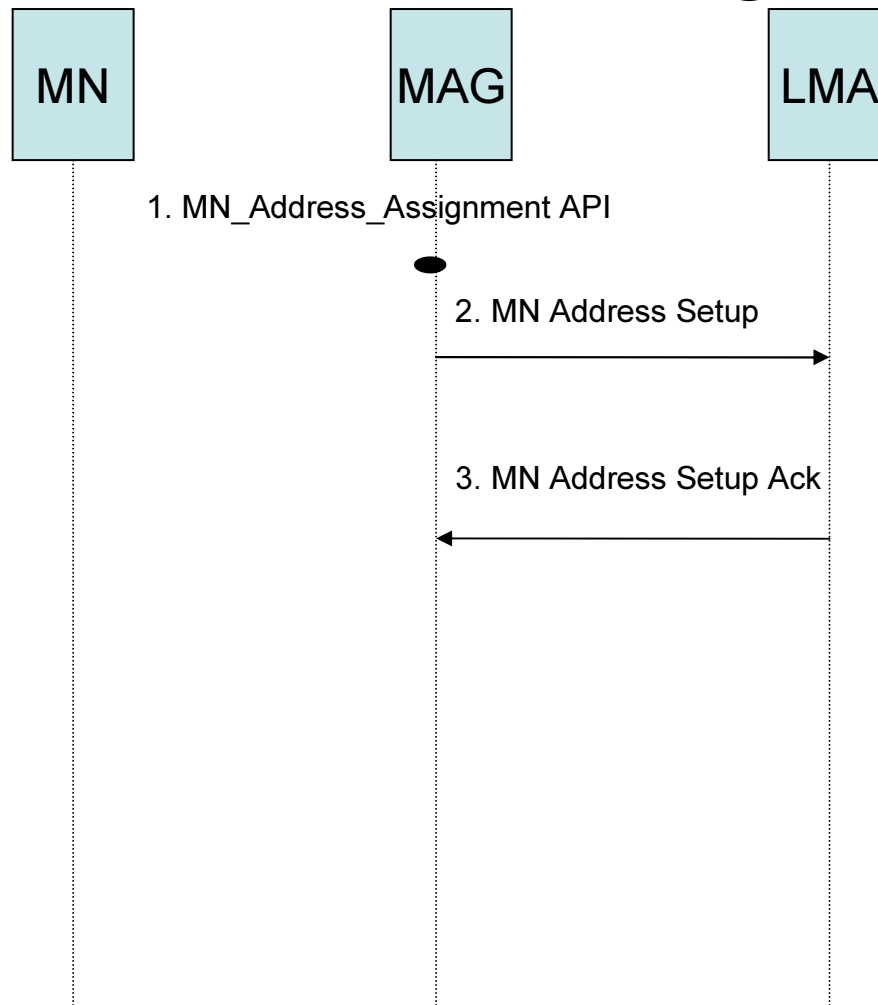
Stateful Address Assignment via DHCP



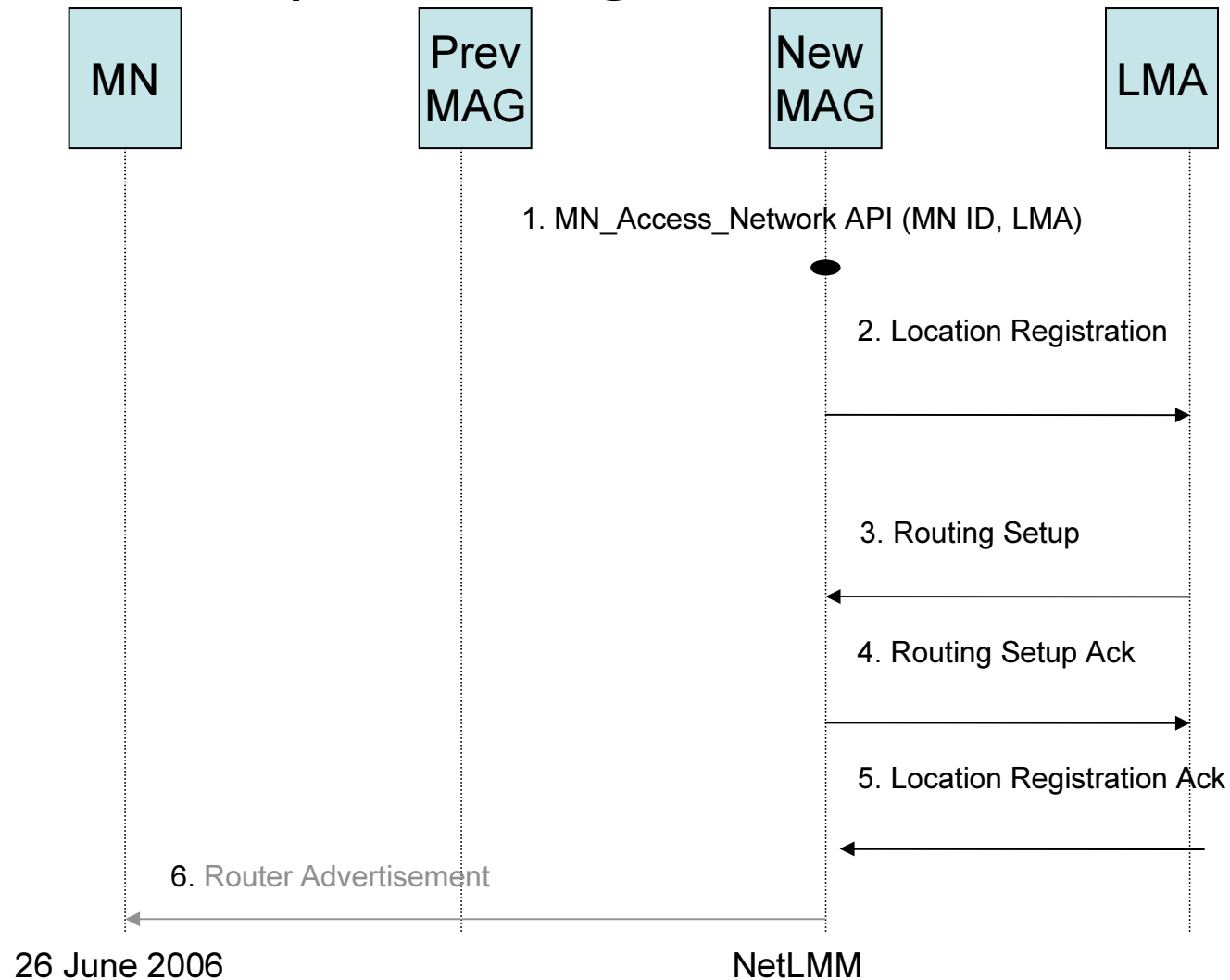
Stateless Address Auto-Configuration



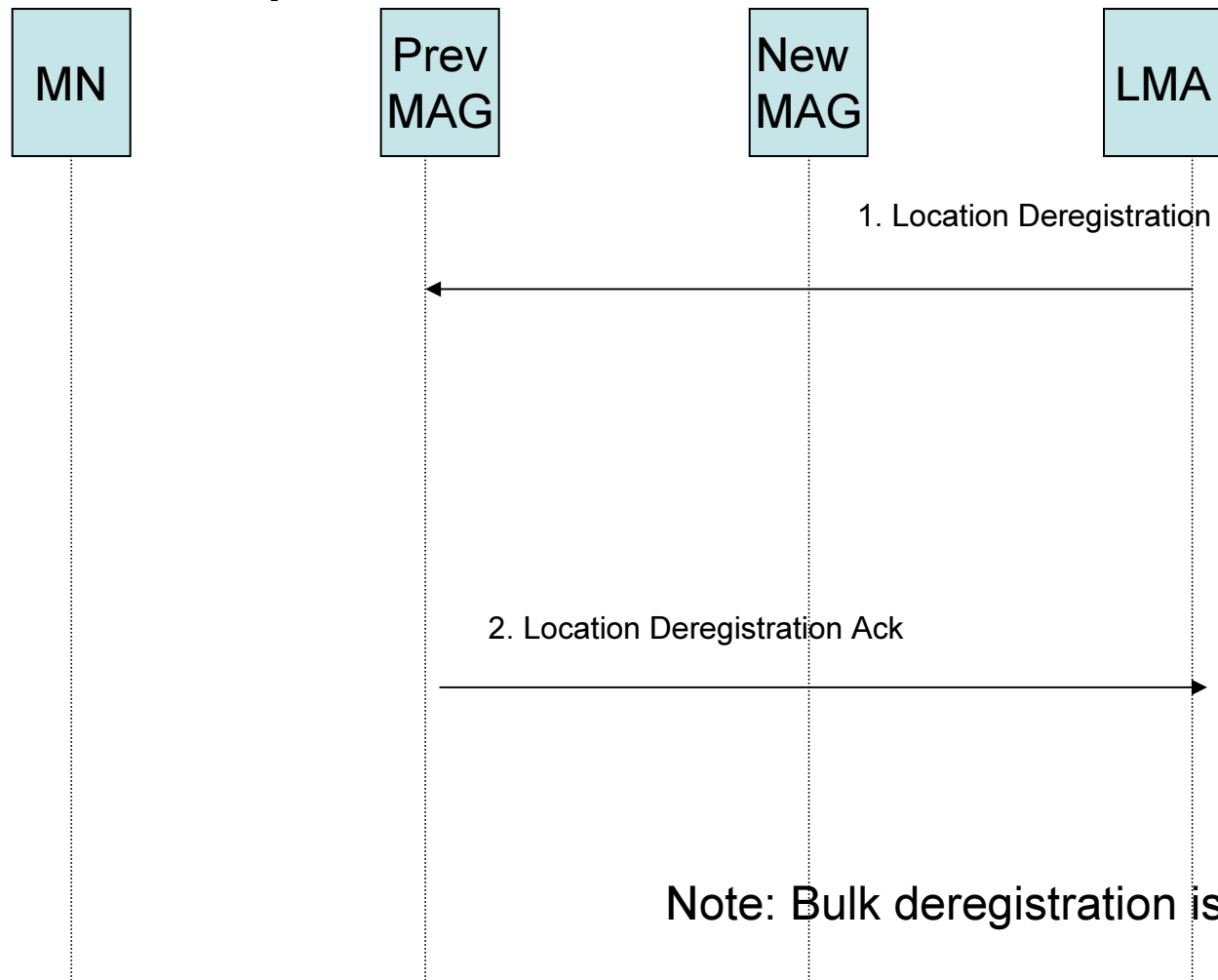
Layer 2 Specific Address Assignment



MAG to MAG Handover (Routing Establishment)

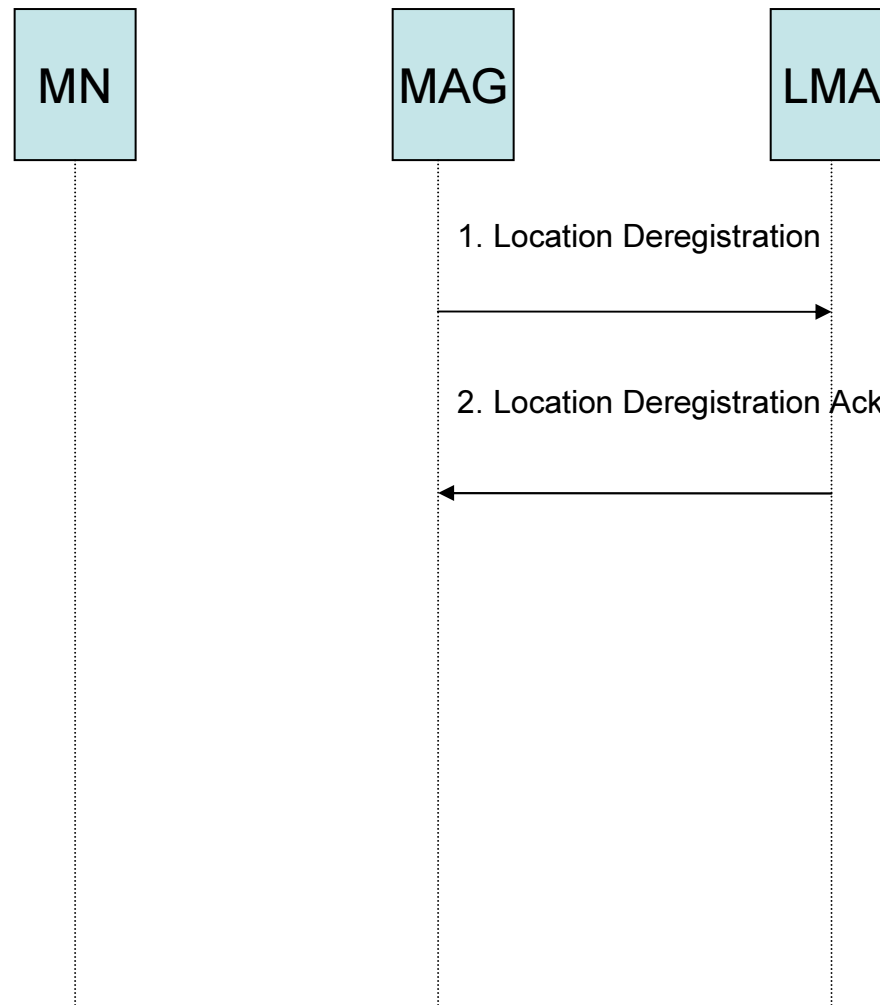


MAG to MAG Handover (Resource Revocation)

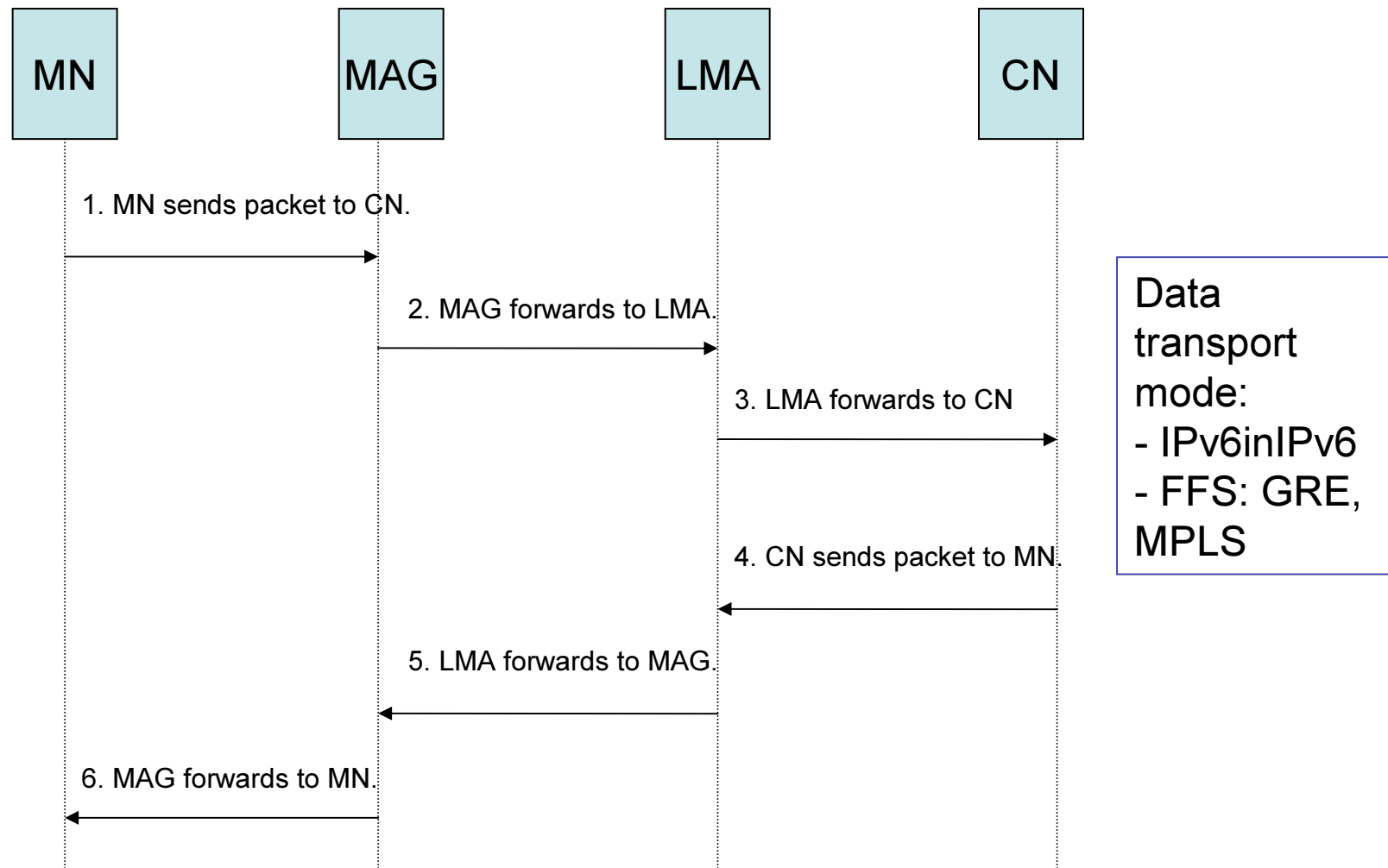


Note: Bulk deregistration is supported.

Network Detachment



Data Flow



Data transport mode:
- IPv6inIPv6
- FFS: GRE, MPLS

Upcoming Work Items

- Describe the re-send mechanism for control messages, in order to provide reliable delivery.
- Add an "LMA Announce message" which can be multicast from a newly connected LMA to trigger listening MAGs to send it Association Requests.
- Add the capability to do bulk MN de-registrations and possibly registrations.
- Define how capability exchanges are handled, and how a unique common capability is derived, for instance to find the tunnelling method to be used as a result of the Association Request and Reply.
- Add message and signalling optimization according to Section 5.12 (Message Optimization).
- And more ...