NetLMM MN-AR Interface
draft-laganier-netlmm-mn-ar-if-00

Julien Laganier & Sathya Narayanan

NetLMM WG, 65th IETF, Dallas, TX, USA

Approach (1)

- Chosen a strawman NetLMM protocol

  → draft-wood-netlmm-emp-base-00

- ARs advertize same off-link subnet prefix
  - Prefix is used for stateless autoconfiguration
  - MN sends all packets to AR
  - Send proxied NA to defend off-link MNs addresses while MN does DAD

Approach (2)

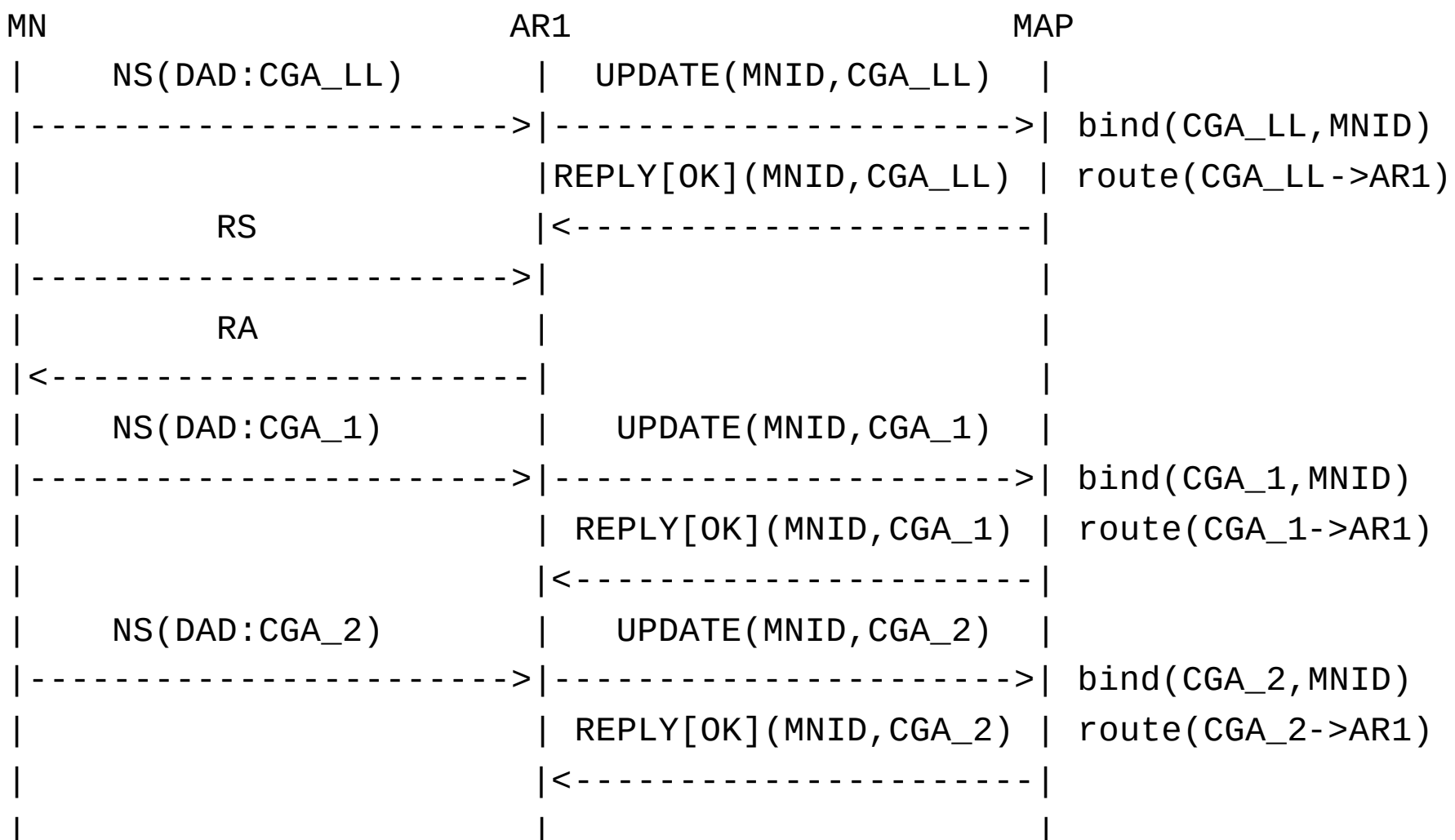
- Use DNA and SEND procedures
  - Quick failover to new AR
  - Secure detection of MN handover
- Use a single public key to generate all CGAs
  - Use that public key as a MNID
  - Bind together all the nodes CGAs
  - Privacy CGAs with different modifier values
  - When AR sees new CGA

    → AR sees the associated public key

    → MAP moves all associated CGAs

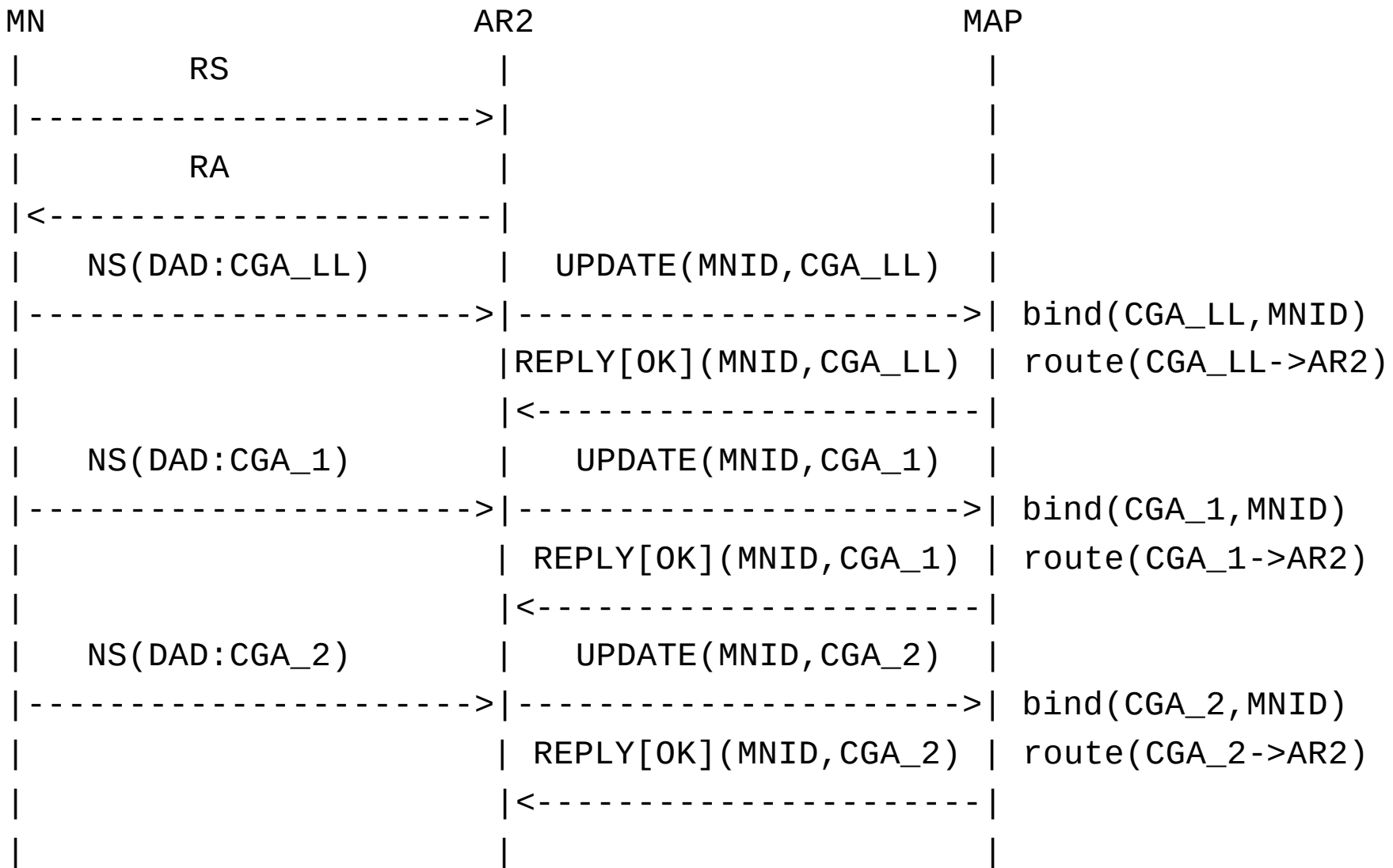
MN powers on in a NetLMM domain

configures one LL and two Global Unicast CGAs



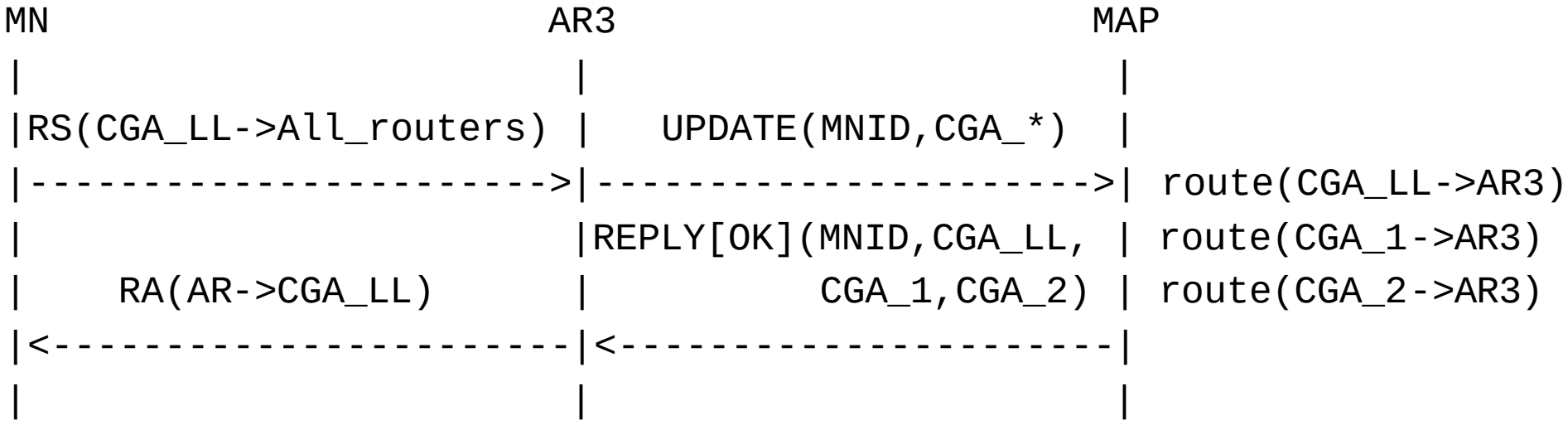
MN moves into a NetLMM domain

configures one LL and two Global Unicast CGAs



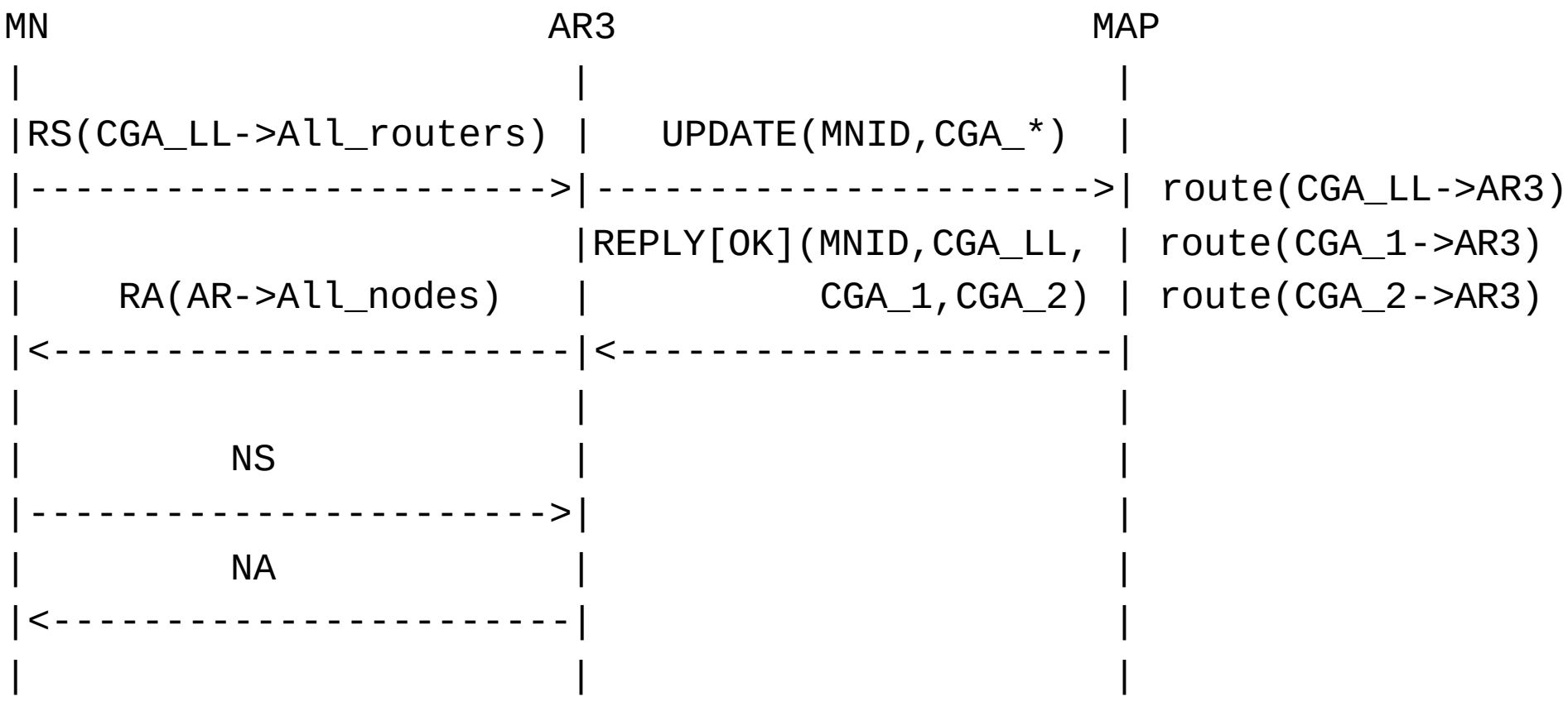
MN handovers in a NetLMM domain

MN gets hint and receive unicast RA



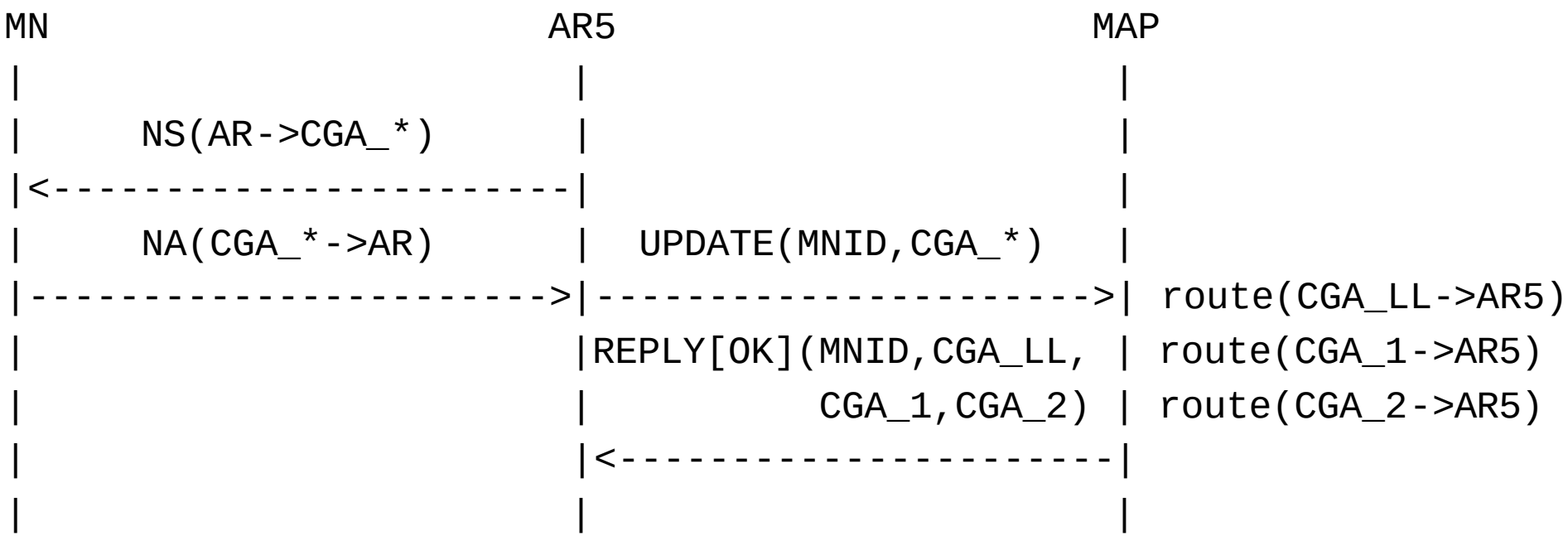
MN handovers in a NetLMM domain

MN gets hint and receive multicast RA



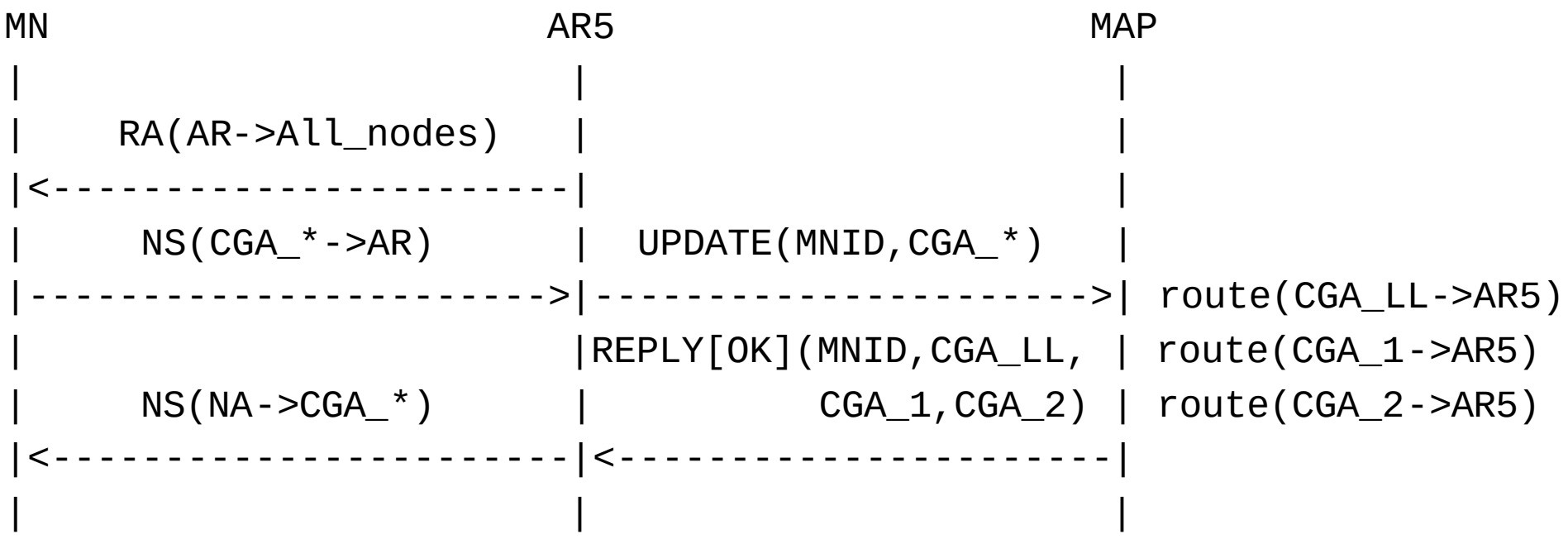
MN handovers in a NetLMM domain

AR gets hint of a MN with known CGA

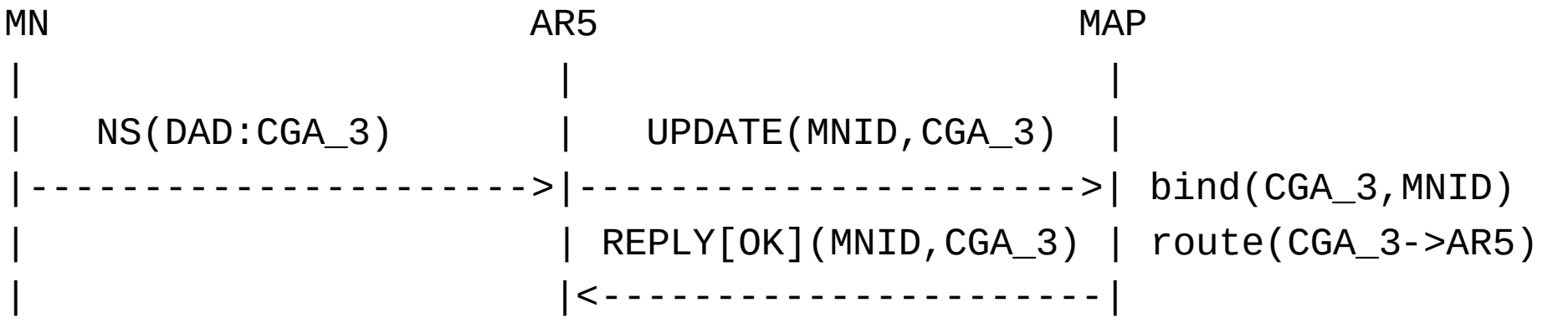


MN handovers in a NetLMM domain

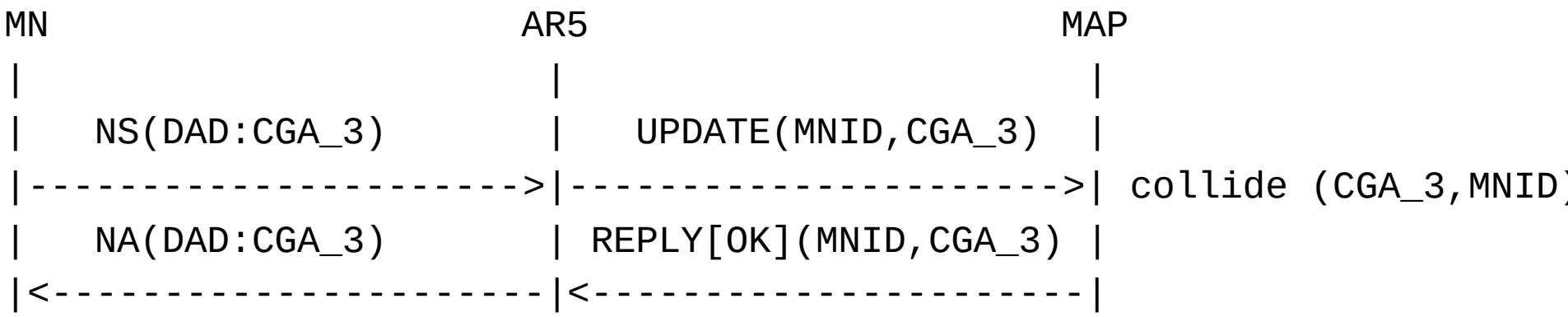
AR gets hint of a MN with CGA



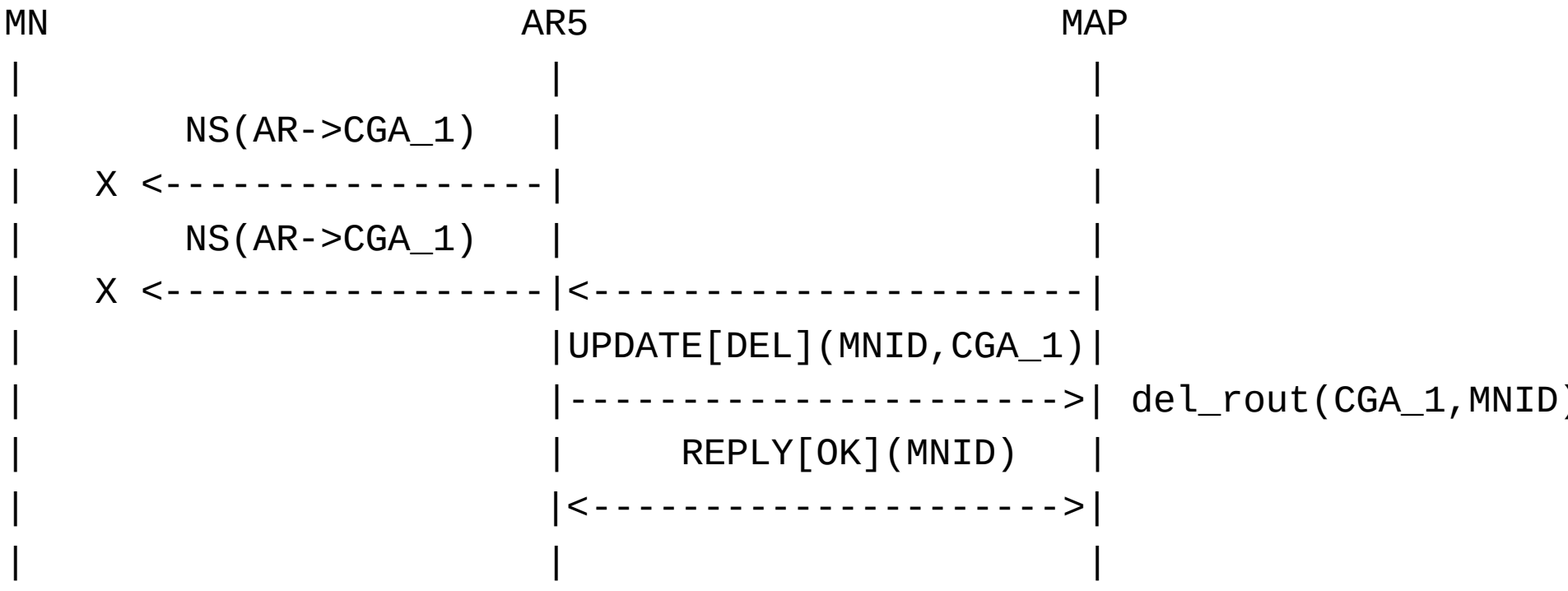
MN configuring later on additional CGAs



MN configuring later on colliding CGAs

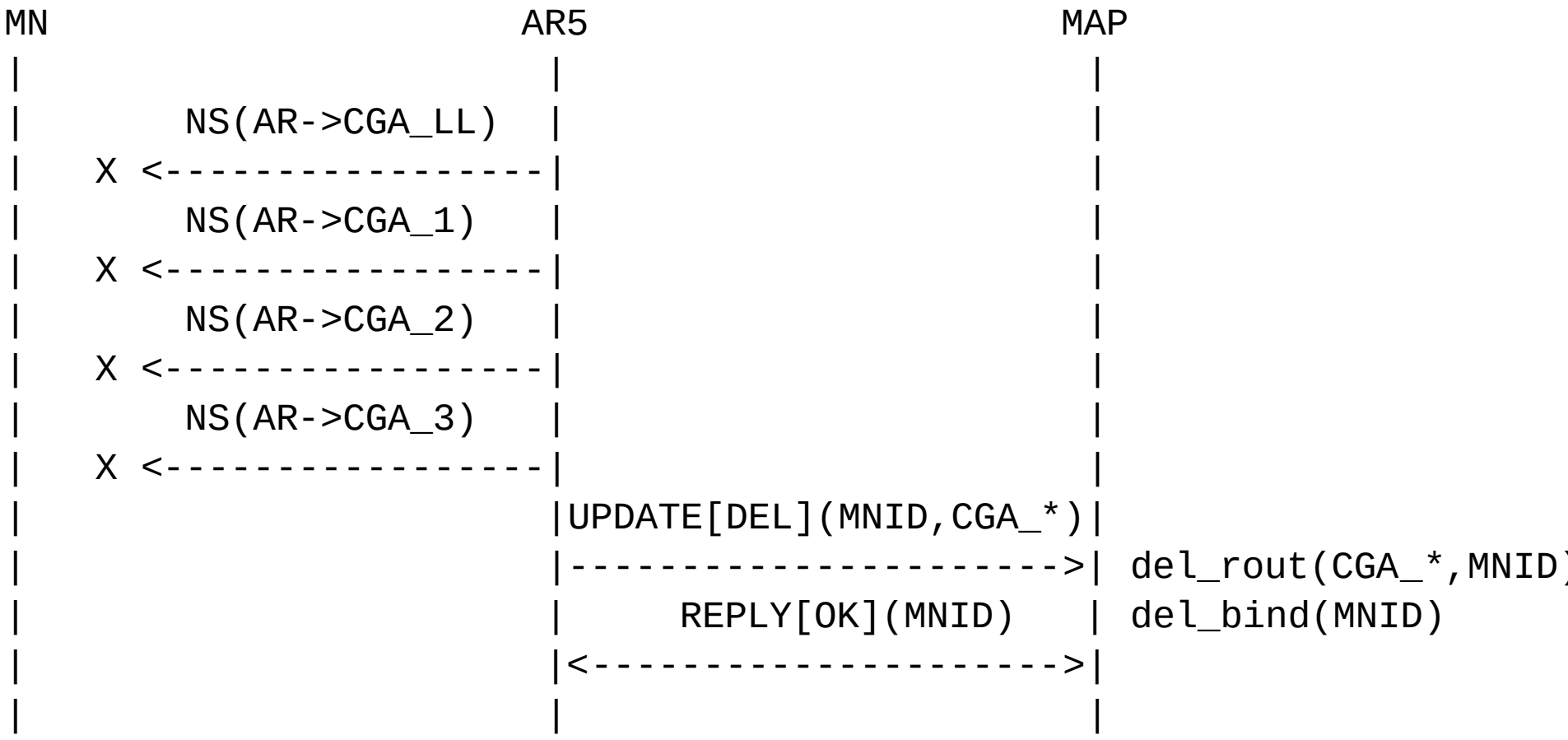


MN unconfigures a CGAs



MN disappears

MN crashes, power off, or leaves domain



Remaining issues

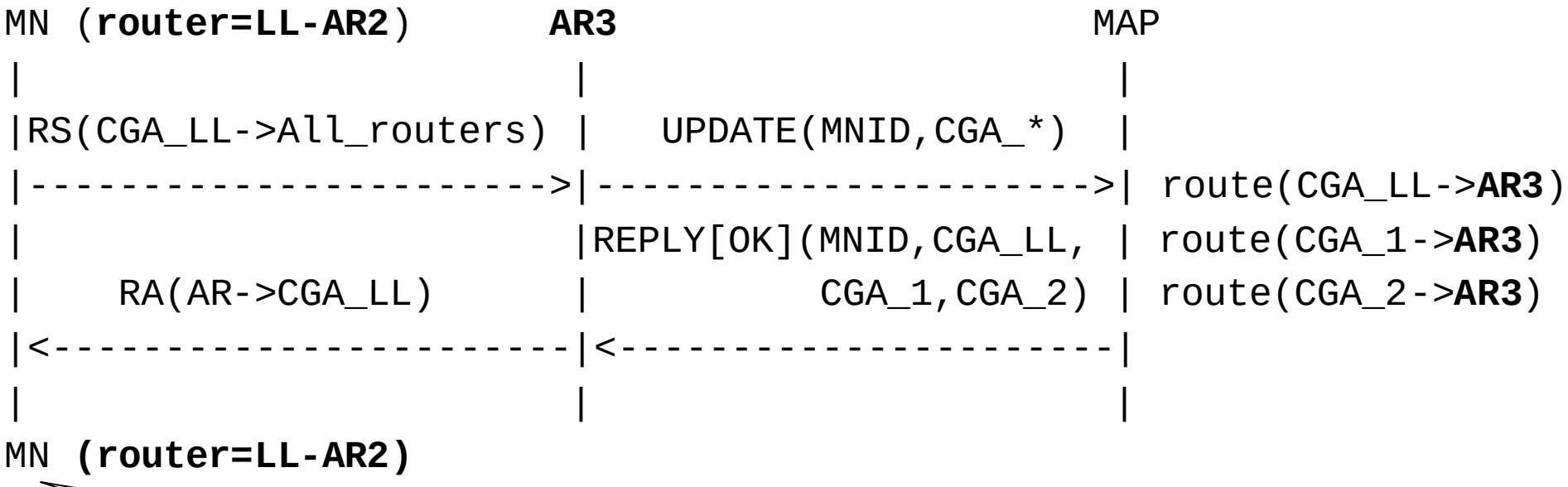
Some are not specific to MN-AR interface

- Current solution requires SEND to use single public key per MN
  - Is it acceptable?
- Choose as default AR the one sending RA
  - Seems a DNA implementation detail
- Do we use a single AR link local address
  - On a given link?
  - On a given domain?

Default Router Issue

MN handovers in a NetLMM domain

LL-AR2: Link-local address of AR2
LL-AR3: Link-local address of AR3



MN assumes **NO link change** and continues using **LL-AR2** as default router

Possible solution 1

- Choose as default AR the one sending RA
  - Eager switching
  - May not be optimal for the general case when MN is not moving.
  - Seems a DNA implementation detail
    - Problem: this would require change of DNA

Possible solution 2

- Require ARs on different links of the same NetLMM domain to use same link-local address(es)
  - AR(s) present same (set of) interface(s) to the MN.
- Include source link-layer address option in all router advertisements

  → update NCE for the router link-local address
- Security Issue:
  - The link-local address is a CGA
  - The same public key has to be shared by all ARs

Possible solution – 2 (Contd.)
MN handovers in a NetLMM domain

AR use same link local address LL-AR