PMIPv6 – MIPv6 Interactions – Scenario C

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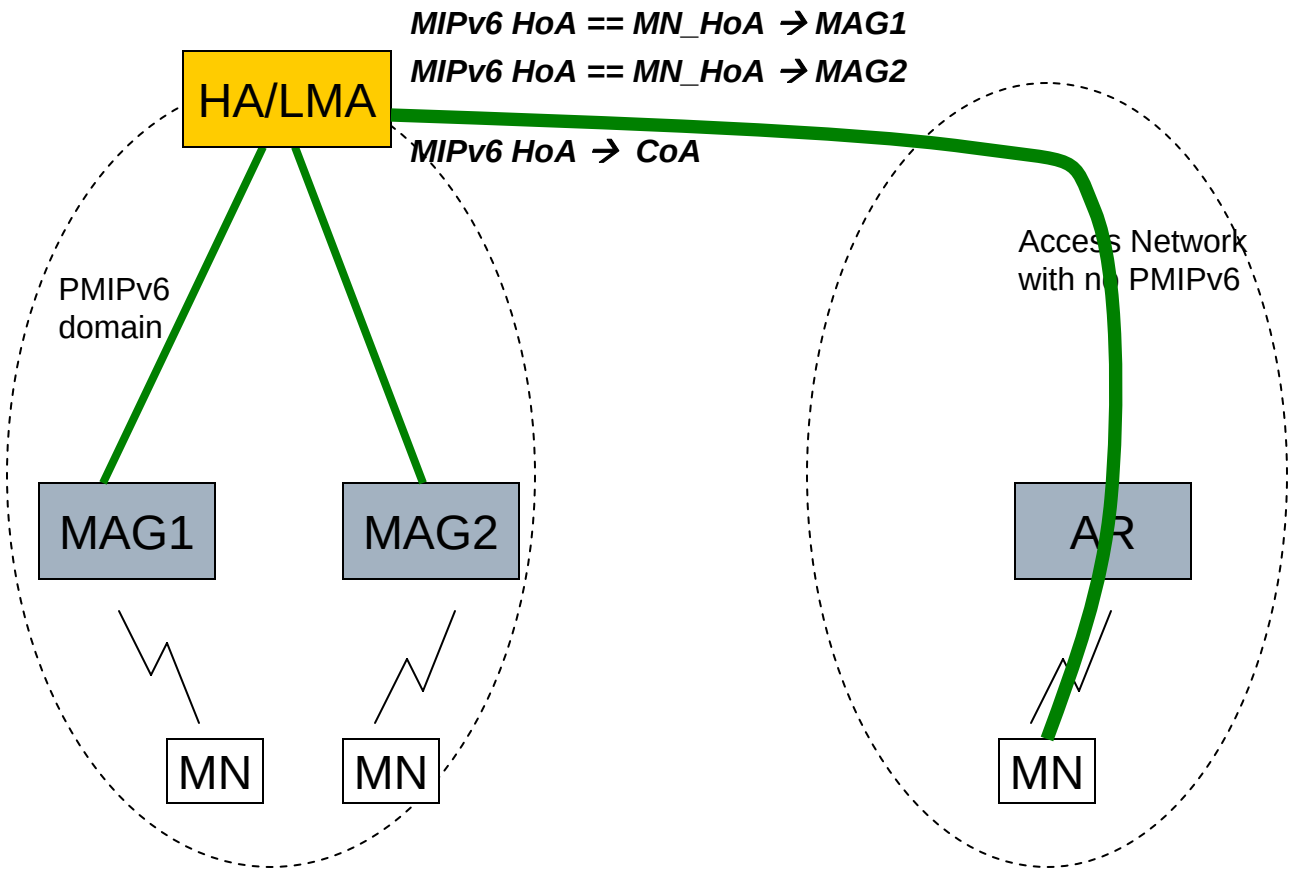
Recap of PMIPv6 – MIPv6 interaction scenarios

- draft-giaretta-netlmm-mip-interactions describes three PMIPv6 – MIPv6 interaction scenarios
- Scenario A – Hierarchical use of PMIPv6 and MIPv6 with PMIPv6 used for local mobility and MIPv6 used for global mobility
- Scenario B – Same access network support both MIPv6 mobile nodes and the mobile nodes that rely on PMIPv6 for mobility management
- Scenario C – A mobile node transitions between using PMIPv6 and MIPv6 depending on the access network it attaches to

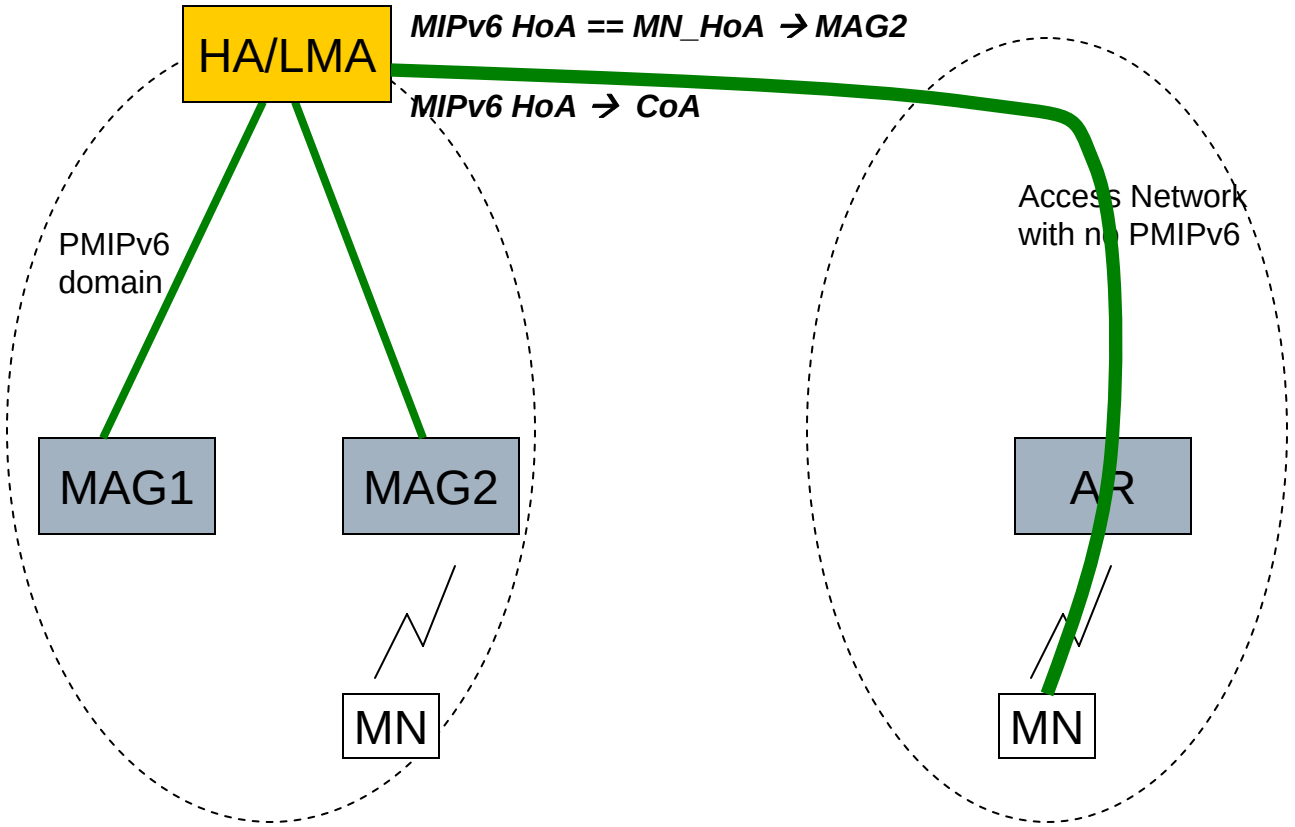
Scenario C

- MN transitions between using MIPv6 and PMIPv6
- MIPv6 HA and PMIPv6 LMA functionalities co-located on the same node
- Some access networks support PMIPv6 and some don't
  - The access networks that support PMIPv6 appear as home link with respect to MIPv6
    - MN does not send a MIPv6 binding update since it is at home
    - No tunneling overhead when MN attached to home link
- Mobile IPv6 stack on the mobile node is always active

Scenario C – Handover Call Flow



Scenario C – Handover into PMIPv6 domain



Scenario C

- Only one Binding Cache Entry for the MN at any time
  - Minimal state
- Same BCE is modified both by MAGs and the MN
- BCE lookup is done with MN identity and home address
- Same process in an implementation can handle both BUs and Proxy Bus

One Open Issue – Race Condition

- Scenario 1
  - MN is attached to the MAG, MAG sends a Proxy BU to refresh binding
  - Proxy BU is delayed
  - MN moves, attaches to an access router and sends a BU
  - Proxy BU received at the LMA after the BU
  - LMA's binding cache points to the MAG, while the MN is attached to the AR

Race Condition

- Scenario 2
  - MN is attached to the access router, sends a BU to refresh the binding
  - BU is delayed
  - MN moves, attaches to a MAG and the MAG sends a Proxy BU
  - BU sent by the MN is received at the LMA after the Proxy BU
  - LMA's binding cache points to the MN's CoA, while the MN is attached to the MAG

Solution for Avoiding the Race Condition

- The LMA implements a mechanism to prevent race conditions
- The mechanism is triggered only if a PBU and a BU are received within a RACE_CONDITION_PERIOD interval
  - RACE_CONDITION_PERIOD is configurable on the LMA

Scenario 1

- LMA receives a BU after a PBU within the RACE_CONDITION_PERIOD
  - Triggers the race condition detection mechanism
- LMA send a binding revocation message to the MAG
- MAG checks if the MN is attached to it
  - If the MN is still attached, the MAG send another Proxy BU and rejects the revocation request
  - If the MN is not attached, the MAG sends a revocation acknowledge message to the LMA

Scenario 2

- LMA receives a PBU after a BU within the RACE_CONDITION_PERIOD
  - Triggers the race condition detection mechanism
- LMA rejects the PBU and sends a Proxy Binding Ack with failed status code - POTENTIAL_RACE_CONDITION
- MAG checks if the MN is attached to it
  - If the MN is still attached, the MAG send another Proxy BU with valid lifetime
  - If the MN is not attached, the MAG does nothing