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OverDRiVE

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Mobility Issues in OverDRiVE Mobile Networks

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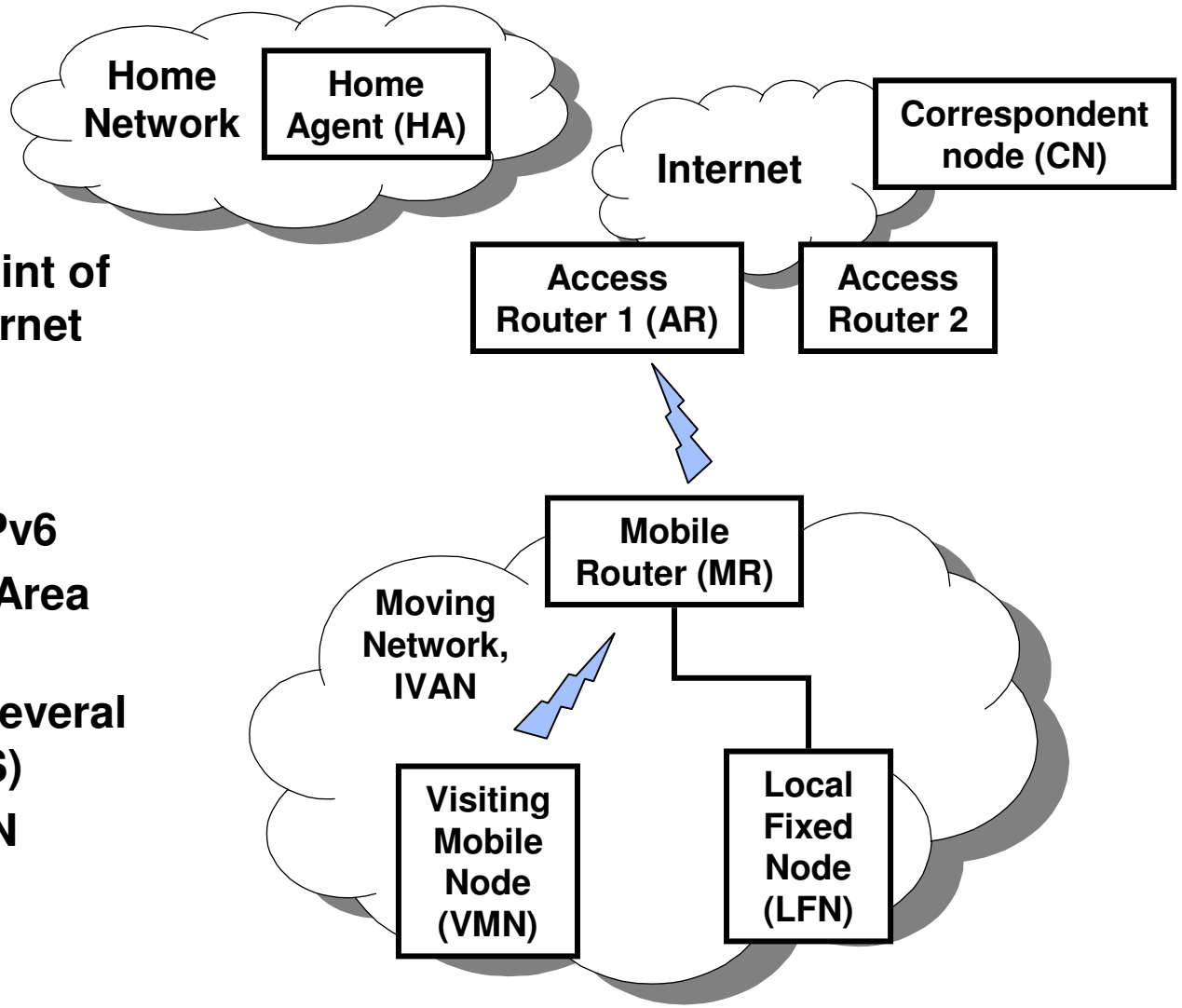
OverDRiVE introduction

- **Goals of the project:**
  - **Mobile Router: mobility management of moving networks, AAA**
  - **Mobile Multicast: by UMTS enhancements and multi-radio multicast group management**
  - **Dynamic Spectrum Allocation: improve spectrum efficiency by system coexistence in the same frequency band**

- **Goals of this presentation**
  - **Mobility management solution for moving networks**
  - **Nested mobile networks**
  - **Multi Access – Multi Homing issues**
  - **Mobility in large vehicles**

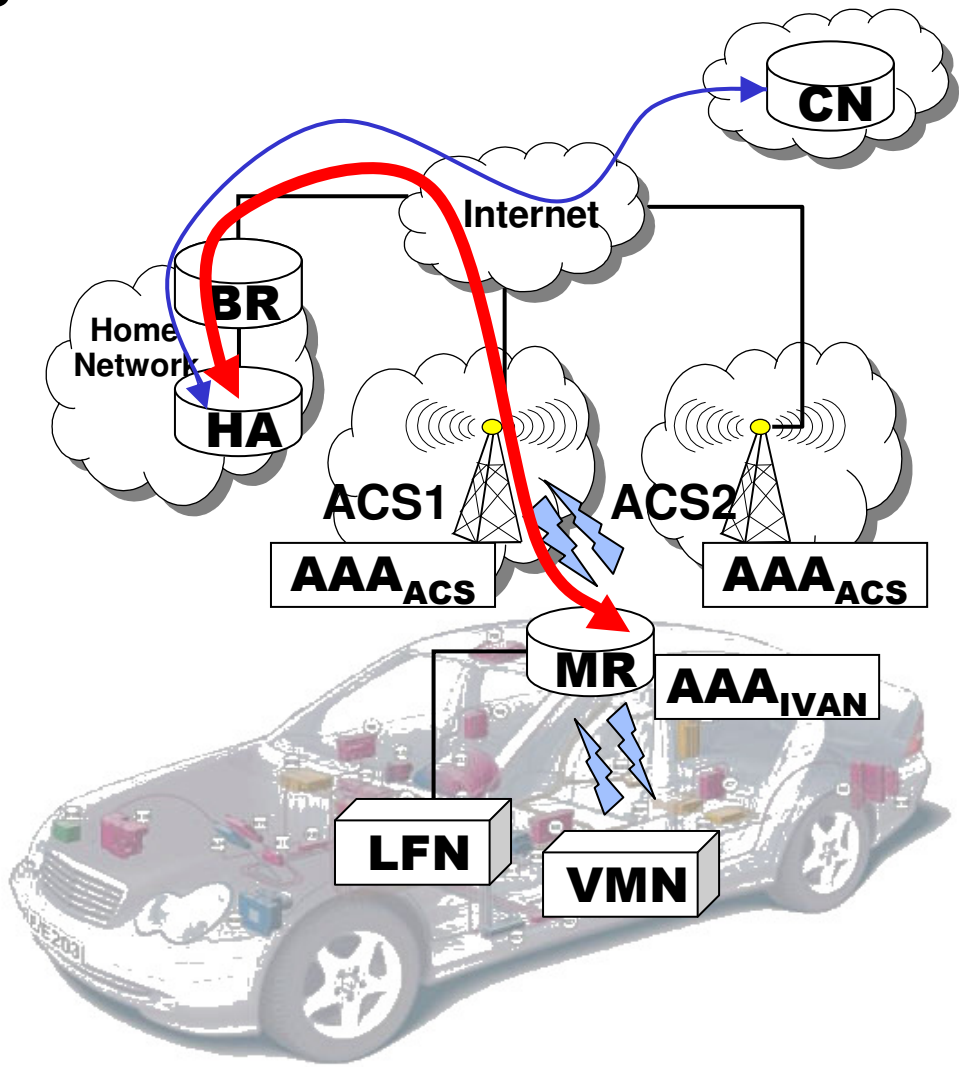
Moving networks

- **Definition:**
  - Entire IP networks
  - Able to change the point of attachment to the Internet
- **In OverDRiVE:**
  - Focusing on Mobile IPv6
  - IVAN: Intra Vehicular Area Network
  - Connection through several Access Systems (ACS)
  - Roaming into the IVAN
  - AAA aspects



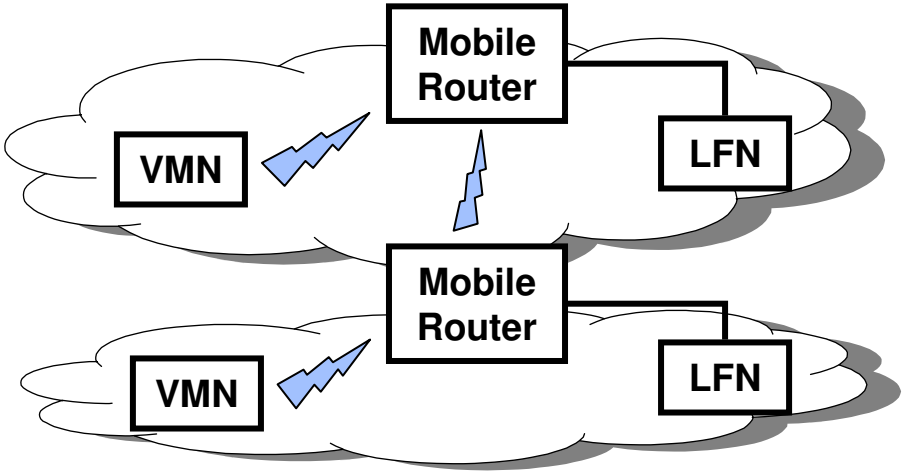
Mobility management for moving networks

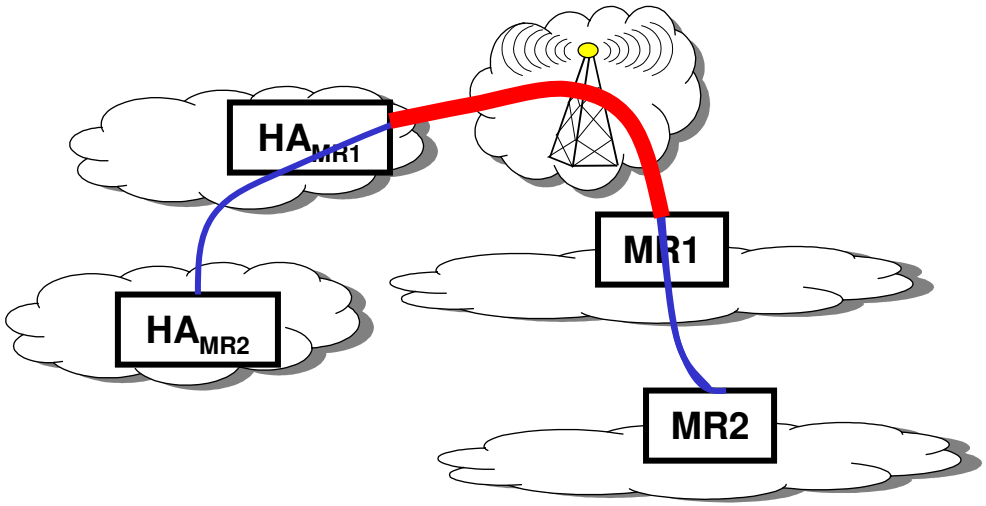
- Mobile Router – Home Agent bi-directional tunnel
- IETF Network Mobility (NEMO) working group
- Modifications to the HA (R flag)
- Features of MRHA:
  - Hides the mobility from the mobile nodes
  - Security aspects
  - Allows nesting
- Drawbacks:
  - No route optimization
  - Multiple encapsulating tunnels



Nested moving networks

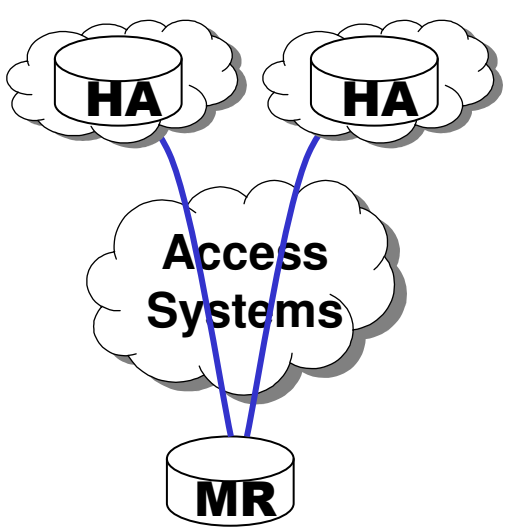
- **Nested moving networks:**
  - Two mobile networks attach to each other
  - Bus on a ferry
  - PAN in IVAN
- **Excessive tunneling**
  - Two or more tunnels on the scarce radio interface
  - But tunneling makes nesting possible

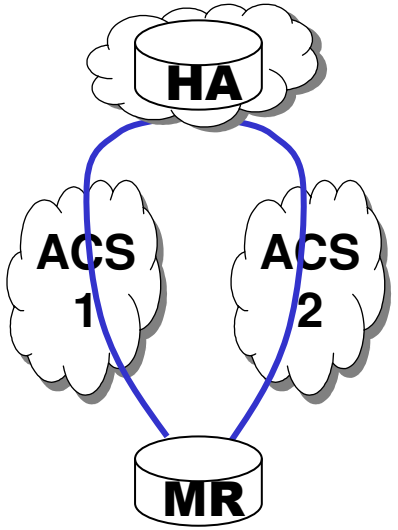


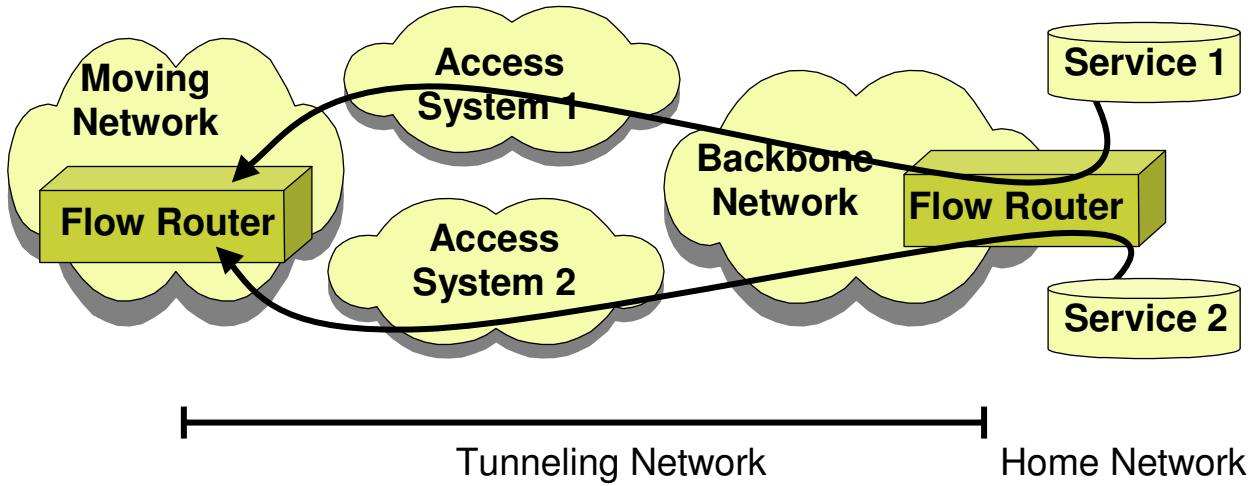


Multi access – multi homing

- **Multi access:**
  - Several access systems for the communication
- **Site multi homing**
  - Hidden from the MR
- **MR multi homing**
  - One or more HAs
- **Solution**
  - Differentiating the traffic on a per flow basis



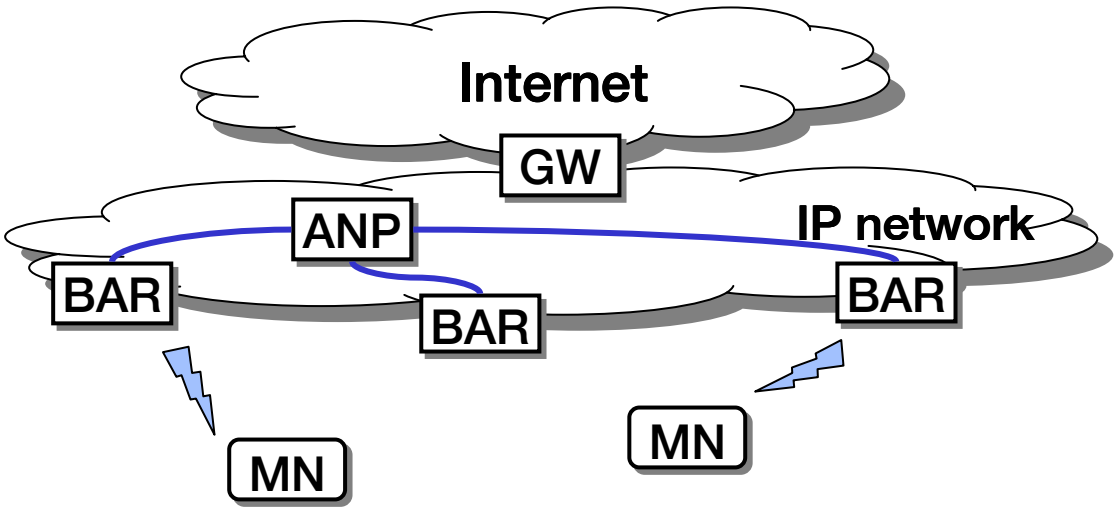




Mobility solution for large mobile networks

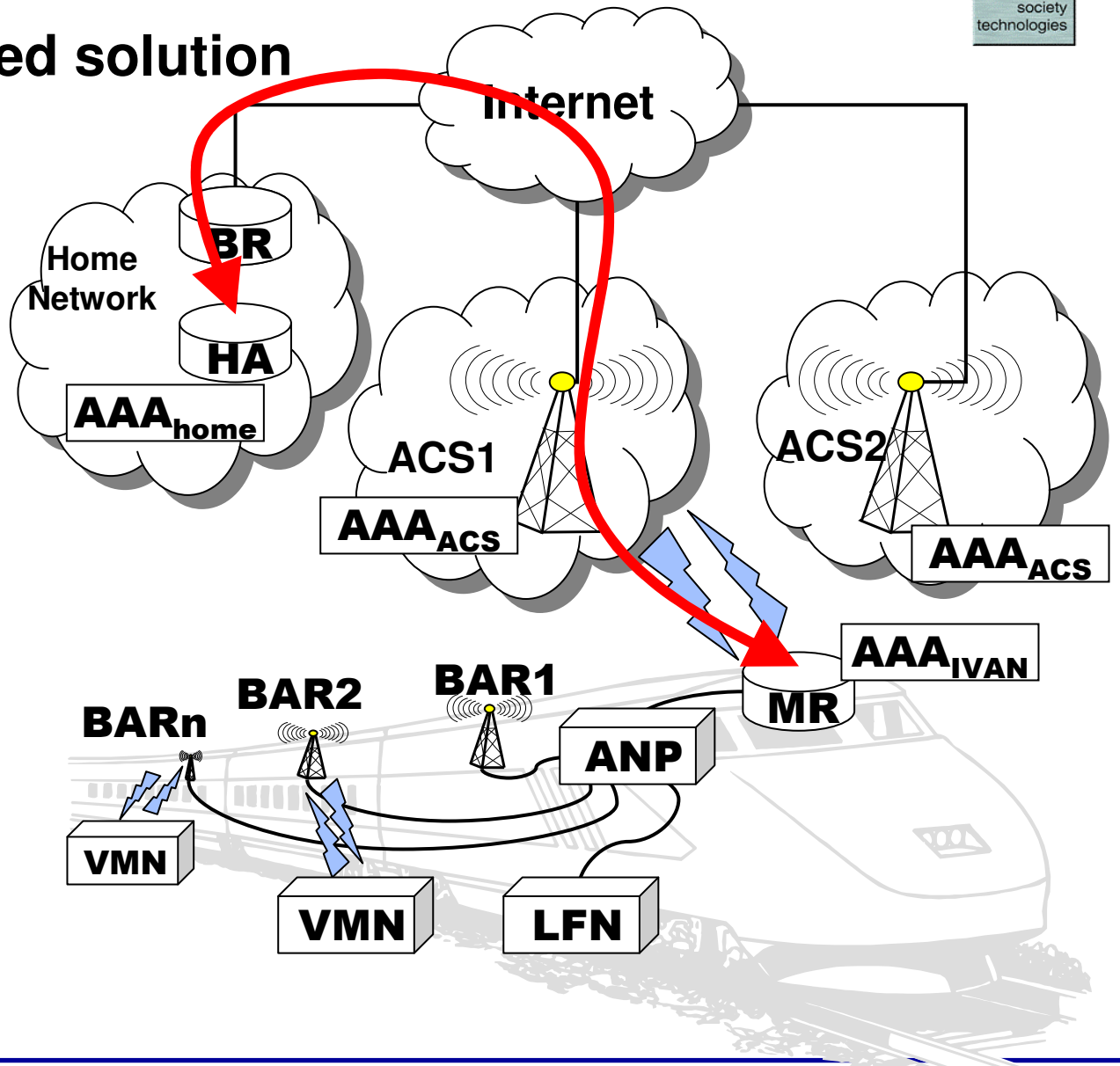
- **Large mobile networks:**
  - lot of users → lot of handovers → need for local mobility management
- **Mobility management inside the IVAN:**
  - BRAIN Candidate Mobility Management Protocol (BCMP)

- **BCMP:**
  - seamless IP handovers
  - IPv4, IPv6 compatibility
  - Based on tunneling
  - Anchor Point (ANP)
  - BRAIN Access Router



BCMP-MRHA combined solution

- **Network mobility:**
  - MRHA tunnel
- **Local mobility:**
  - BCMP
- **Interface:**
  - ANP owns the IP addresses
  - MR is aware of the addresses



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Ericsson – MIPL

Thank you for your attention!

Questions?