CSE561 – Mobility

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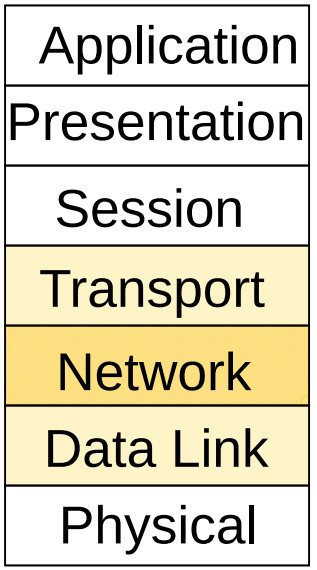
Mobility

- Focus:
  - Routing when some of the nodes are mobile

- Issues caused by mobility
- Mobile IP



Mobility scenarios

- Kind
  - Most routers/hosts stationary, a few are mobile (Internet)
  - Routers fixed, all hosts are mobile (cellular)
  - Routers and hosts are all mobile (ad hoc)
  - Entire network is mobile (plane)
- Approach
  - Transport; IP can change as node moves
  - Network; IP stays the same
  - Link; for mobility within a subnet

- Which of these can Internet routing handle?

Mobility issues

- Routing scalability
  - Who knows where the mobile is now?
  - How much work does everyone need to do?

- Route quality
  - How often do we find mobiles?
  - How circuitous are routes?

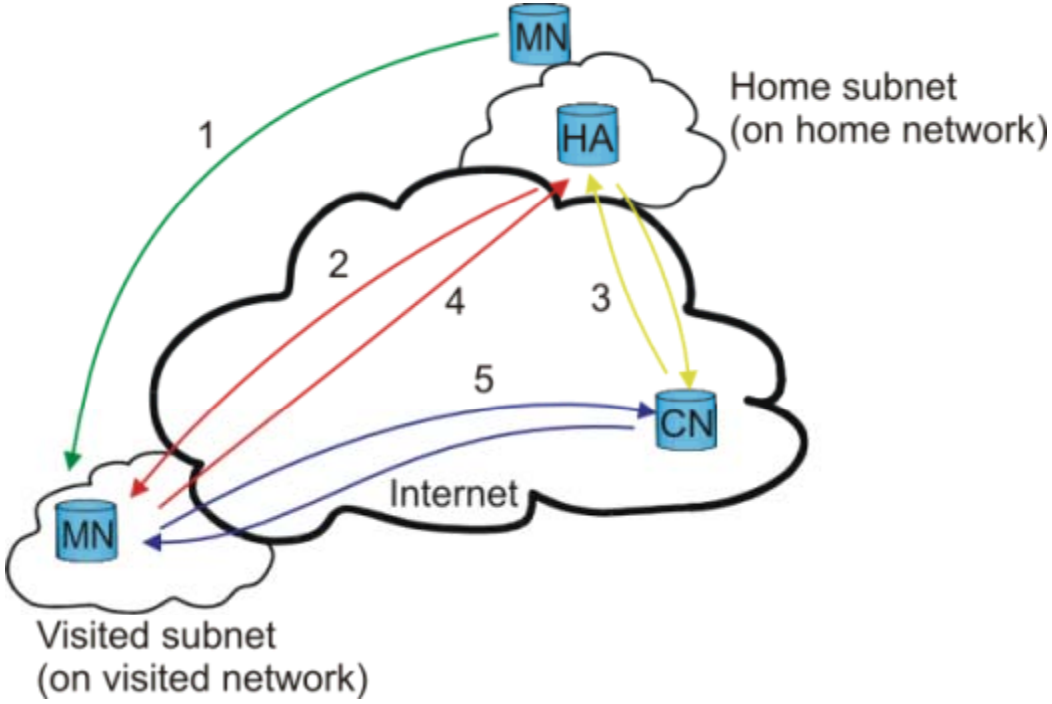
Basic solution for mobile host scenario

- Hide mobility from most of the network
  - Address reflects location (e.g., phone number)
  - Send packet to home location; it will know where the mobile is
  - Mobile at foreign location must register with home
- Pros: scales well, works for mobile-to-mobile
- Cons: triangle (circuitous) routes to optimize

Mobile IPv6

MN=mobile, HA=home,
CN=correspondent

1. MN travels
2. MN registers with HA
3. CN sends to HA
4. HA tunnels to MN
5. MN replies to CN;
   CN learns MN location



Supersedes mobile IPv4

- No foreign agent, optimizes triangle routes by default

Mobility in cellular networks

- Details differ, but analogous design
- Home agent → Home Location Register (HLR)
- Foreign agent → Visitor Location Register (VLR)

- Also: mobile IP starting to be used for mobility across cellular and other networks (as well as inside some cellular networks, CDMA2000?)

GPSR discussion

- Which mobility scenario does it tackle?
- How does routing work, in a nutshell?
- How good are the routes?
- What are the key benefits of the scheme?
- What are the key topology assumptions?
- How significant is the location assumption?