Managing mobility

## Managed by infrastructure

Approaches

The internet providers can chose among the following:

- Let **routing** handle it:
    - routers advertise permanent address of mobile-nodes-in-residence via usual routing table exchange.
        - routing tables indicate where each mobile located
        - no changes to end-systems
- Let **end-systems** handle it:
    - indirect routing: communication from correspondent to mobile goes through home agent, then forwarded to remote
    - direct routing: correspondent gets foreign address of mobile, sends directly to mobile

Direct routing

#card #exam
(Q5)
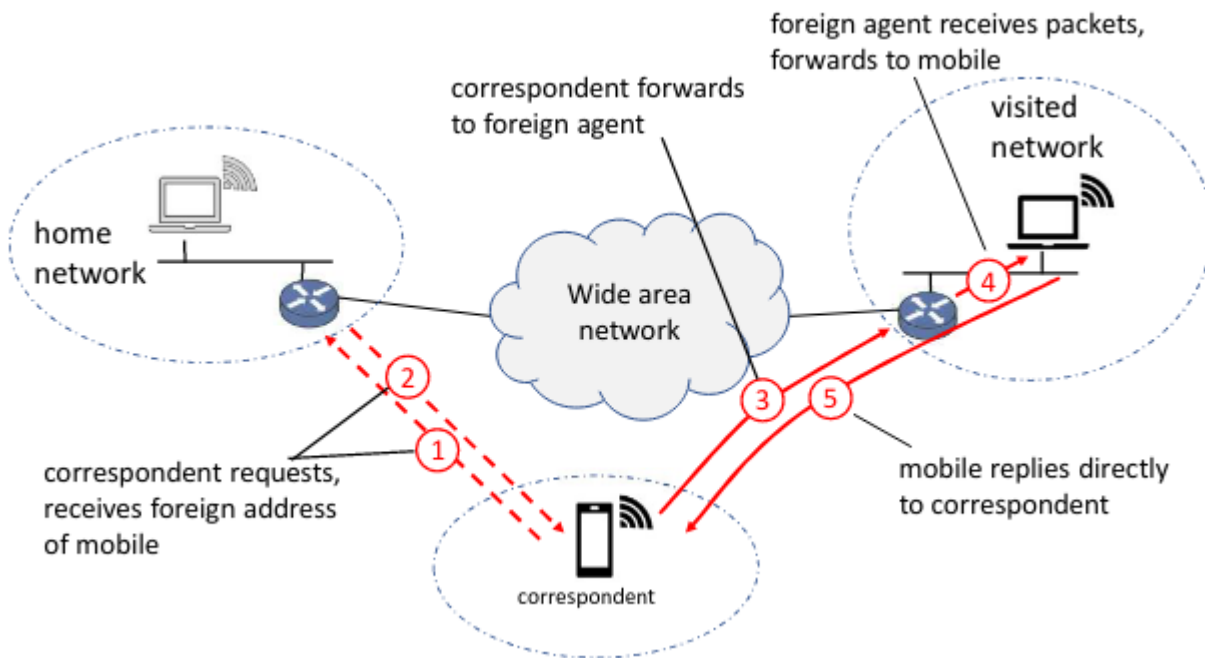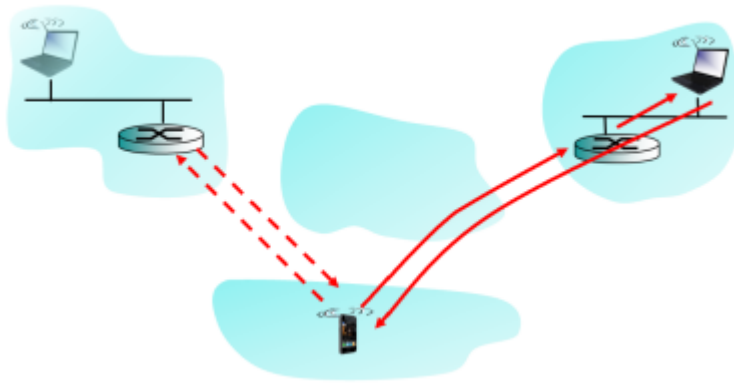
- Steps
    1. The **correspondent** send a request to the **home agent** in order to get the care-of-address
    2. The home agent responds with the **care-of-address** that received during **the registration event**
    3. The correspondent directly talks with the **visited network** by talking with the **foreign agent**
    4. The foreign agent sends the packet to the mobile
    5. The mobile directly responds to the correspondent
- Observations
    - The overhead during the communication of undirect routing is avoided
    - **Non-transparent** to correspondent, that needs to get the care-of-address
        - **Problem of mobility**: is solved by having the device connecting to the new foreign agent that will connect to the **old one that acts as an hook and redirects calls to the new one**.

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Foreign net, visited at session start

anchor foreign agent

Wide area network

① ② ③ ④ ⑤

correspondent

correspondent agent

new foreign agent

New foreign network

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Indirect routing

(Q6)

home agent intercepts packets, forwards to foreign agent

foreign agent receives packets, forwards to mobile

visited network

home network

Wide area network

correspondent addresses packets using home address of mobile

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correspondent

mobile replies directly to correspondent

- Steps of the **triangle routing**
    1. The **correspondent** establishes the communication towards with the **home agent** by using the **permanent address** of the mobile device
    2. The home agent forwards the packets to the visited network where the device is by communicating with the **foreign agent**.
    3. The foreign agents forwards to the mobile device.
    4. The mobile device can talk directly with the correspondent
    5. The correspondent will never be able to bypass step 1 and step 2
- Observations
    - Ineffective when correspondent and mobile are in the same visited network
    - **Problem of mobility**: solved by the home agent just by updating the care-of-address to maintain the connection

Cellular networks

GSM Hand-off

#card #exam
(Q7)
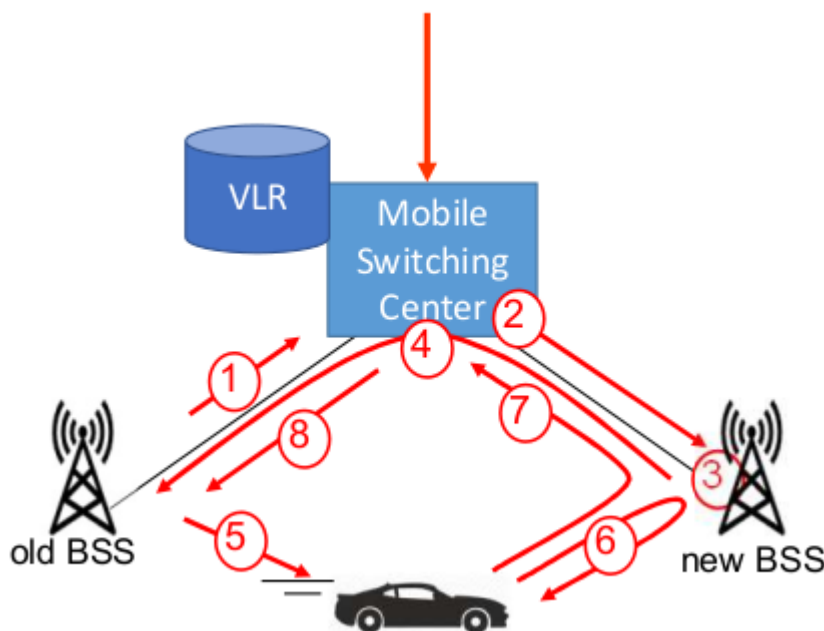
Hand-off that is routing call between two base stations managed by the same MSC without interrupting the call

1. The old BSS constantly monitors the situations and decides to do an hand-off and sends the request to MSC
    - Stronger signal from the new BSS
    - Loadbalancing

- GSM does not provide the policy, just defines the mechanism
2. The MSC sends the request of allocating the channel to new BSS
3. New BSS allocates the radio channel
4. New BSS informs the old BSS that is ready for the hand-off
5. Old BSS tells mobile to hand-off to new BSS
6. Mobile connects to new BSS
   - For a small period mobile is connected to both of them
7. If successful the mobile confirms the hand-off to MSC
8. The mobile confirms the hand-off to old BSS that can free old resources
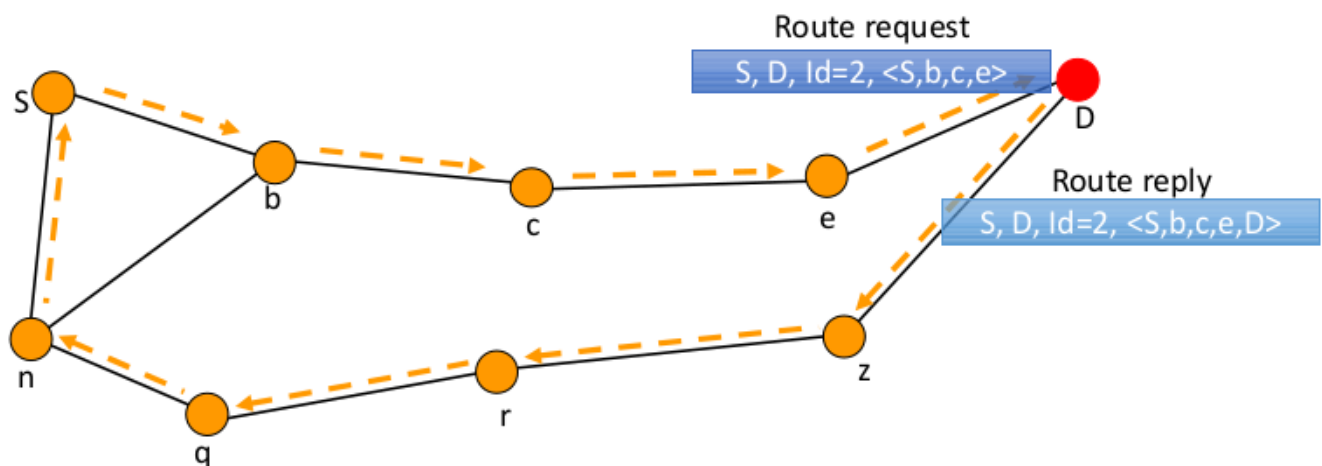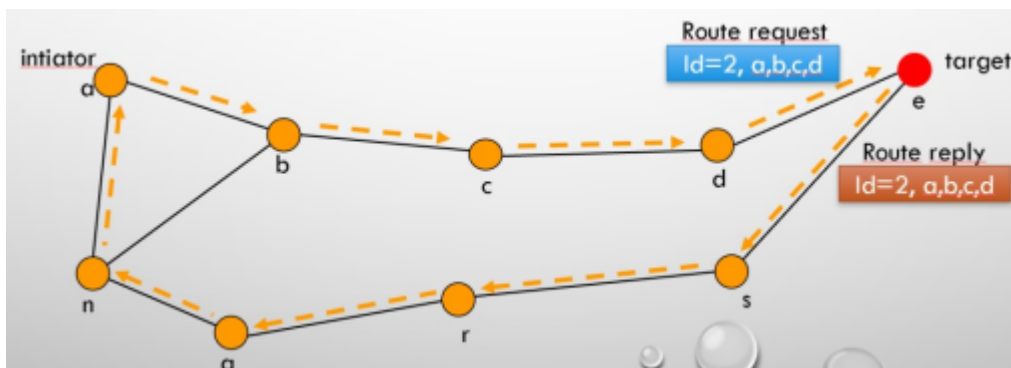
Managed ad-hoc

Routing

DSR

Route reply without bidirectional links

#card #exam
(Q8)

- The target receives a RREQ and replies with RREP on a different path <s,r,q,n> that has been discovered with a RREQ or it was already in the **route cache**

- - **Links are not bidirectional** in this case!
- This takes time so the packets that the source wants to send, are kept in a send-buffer