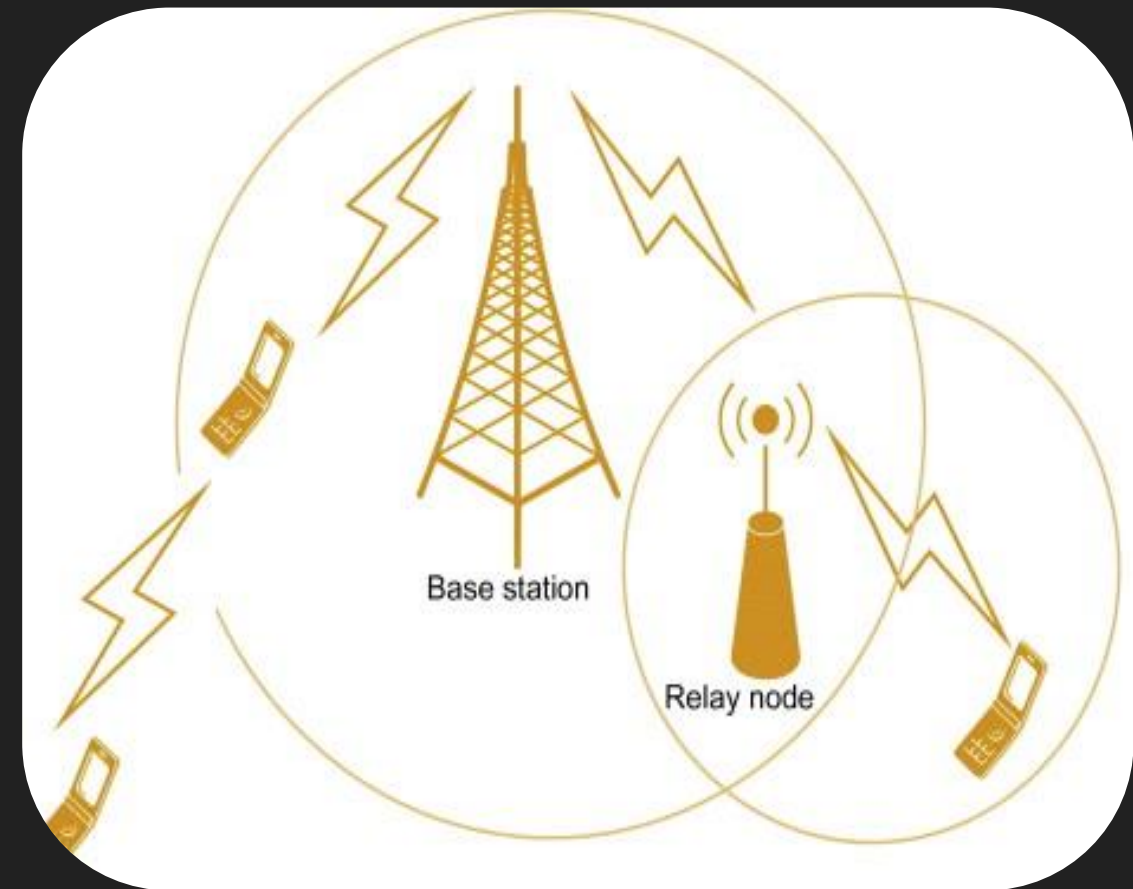


Managing Mobility in Cellular Networks

A Case Study of GSM Network

Cellular Networks

- Type of wireless communication network where mobile devices communicate with each other and with a central hub known as a base station or cell tower.
- The ability of a mobile device to move within the network's coverage area while maintaining an active connection is known as Mobility.



GSM cellular network

- Stands for Global System for Mobile Communications
- A second-generation (2G) technology
- Digital cellular technology used for mobile communication.
- Similar to Mobile IP (Internet Protocol), GSM adopts an indirect routing approach.

Home and Visited Networks

- **Home Network**

- This is the network where the mobile user has a subscription and is billed for monthly cellular service.
- Home Location Register (HLR) Database to store phone numbers and location information.

- **Visited Network**

- This is the network in which the mobile user is currently located.
- Visitor Location Register (VLR) Database that includes entries for each mobile user currently within its coverage area.

- **Mobile Switching Center (MSC)**

Routing Calls to a Mobile User

- **Initiating the Call:**

- Correspondent dials mobile user's number.
- Call routed through PSTN to the home MSC, marking

- **Determining User Location:**

- Home MSC receives the call, interrogates HLR for user location.
- HLR returns the mobile station roaming number (**MSRN**), a temporary identifier associated with the visited network.

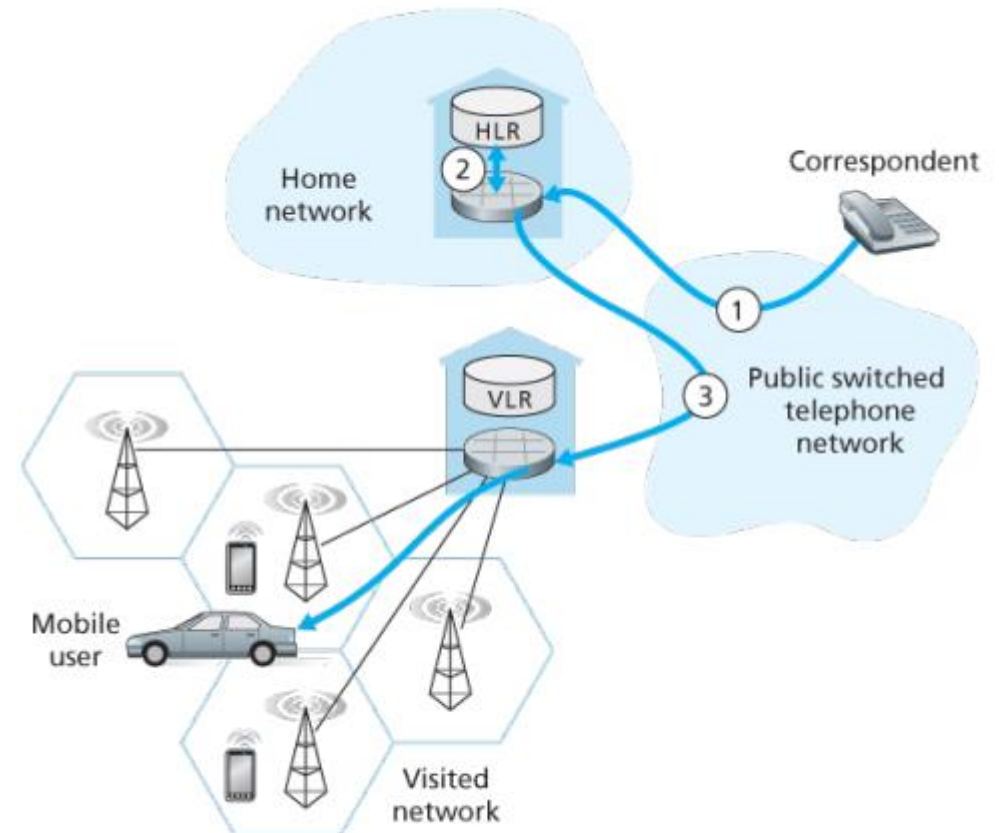


Figure 7.30 Placing a call to a mobile user: Indirect routing

Routing Calls to a Mobile User

- **Setting up Second Leg of the Call:**

- Using the roaming number, home MSC establishes the second leg of the call.
- Call progresses from correspondent to home MSC, then to visited MSC, and finally to the base station serving the mobile user.

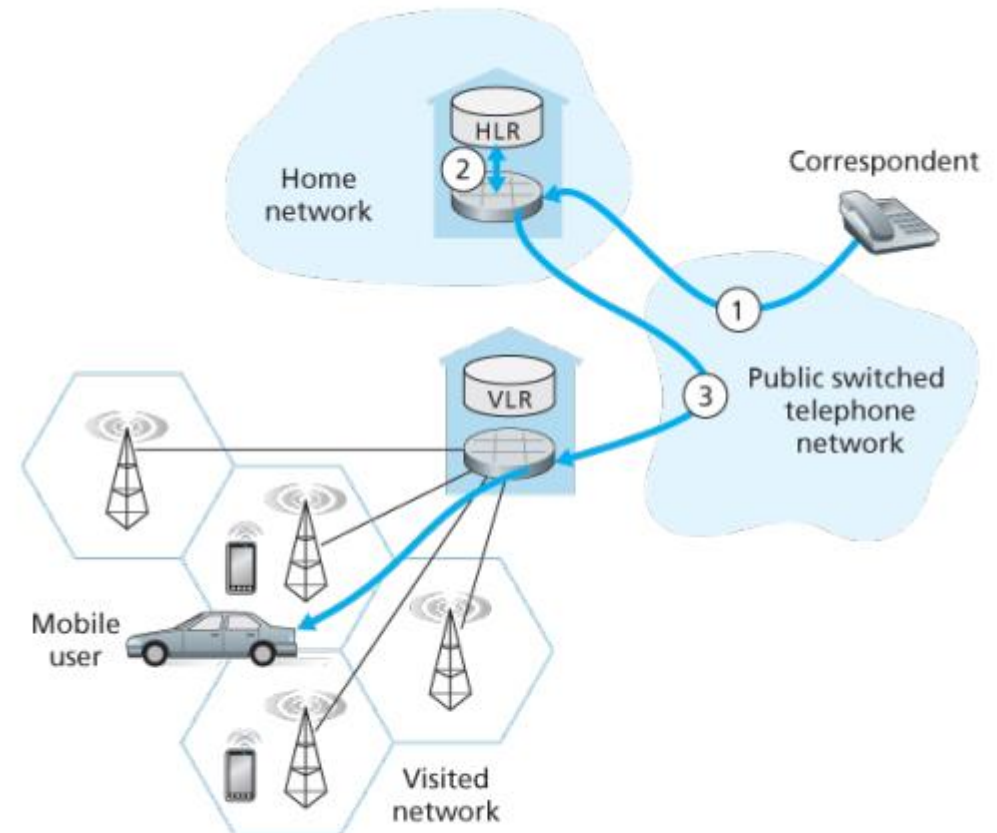


Figure 7.30 Placing a call to a mobile user: Indirect routing