

CN-Advanced L40

Mobility Overview

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Resources Acknowledgement

Chapter 6 Wireless and Mobile Networks

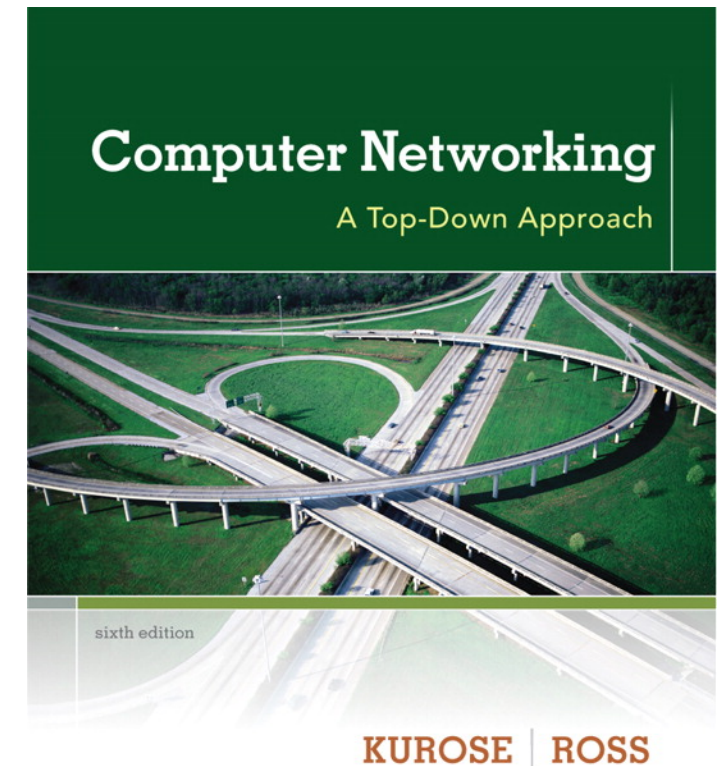
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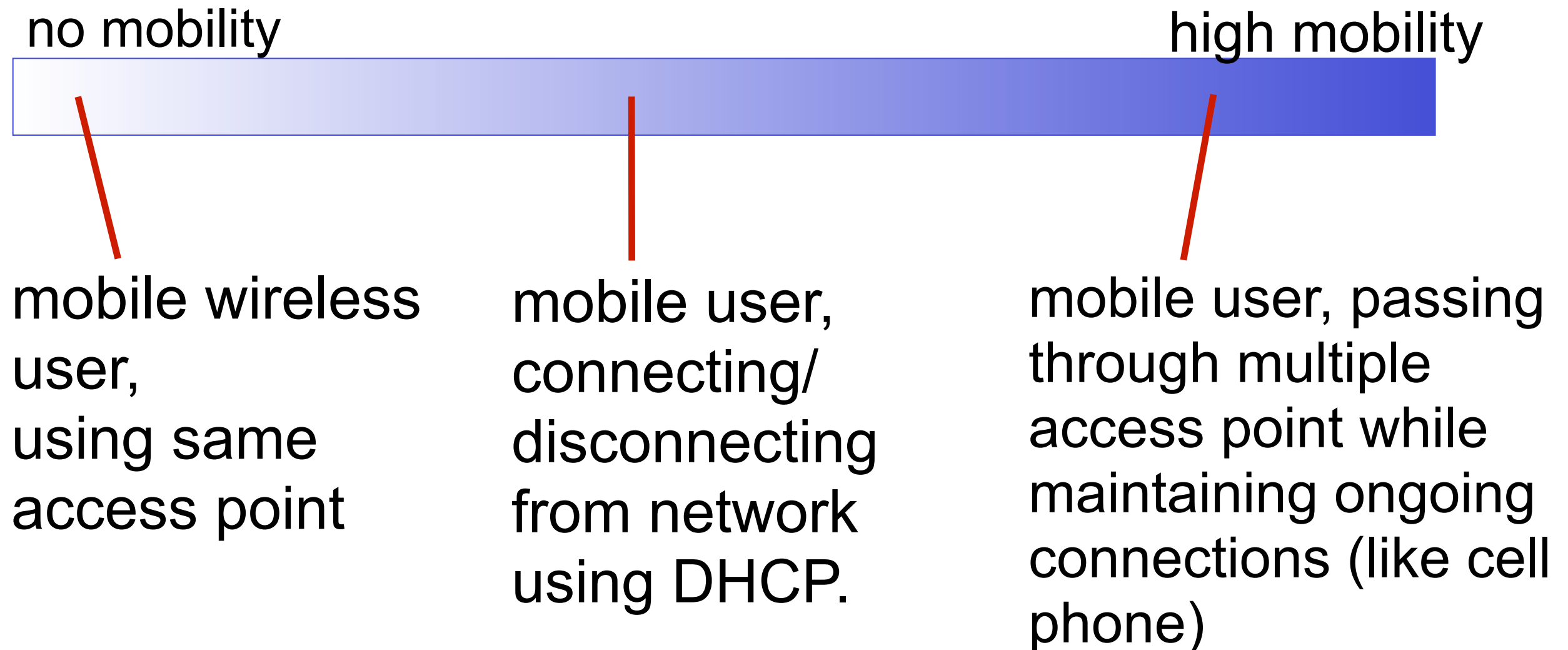
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*Computer
Networking: A Top
Down Approach*
6th edition
Jim Kurose, Keith Ross
Addison-Wesley
March 2012

What is mobility?

- spectrum of mobility, from the *network* perspective:

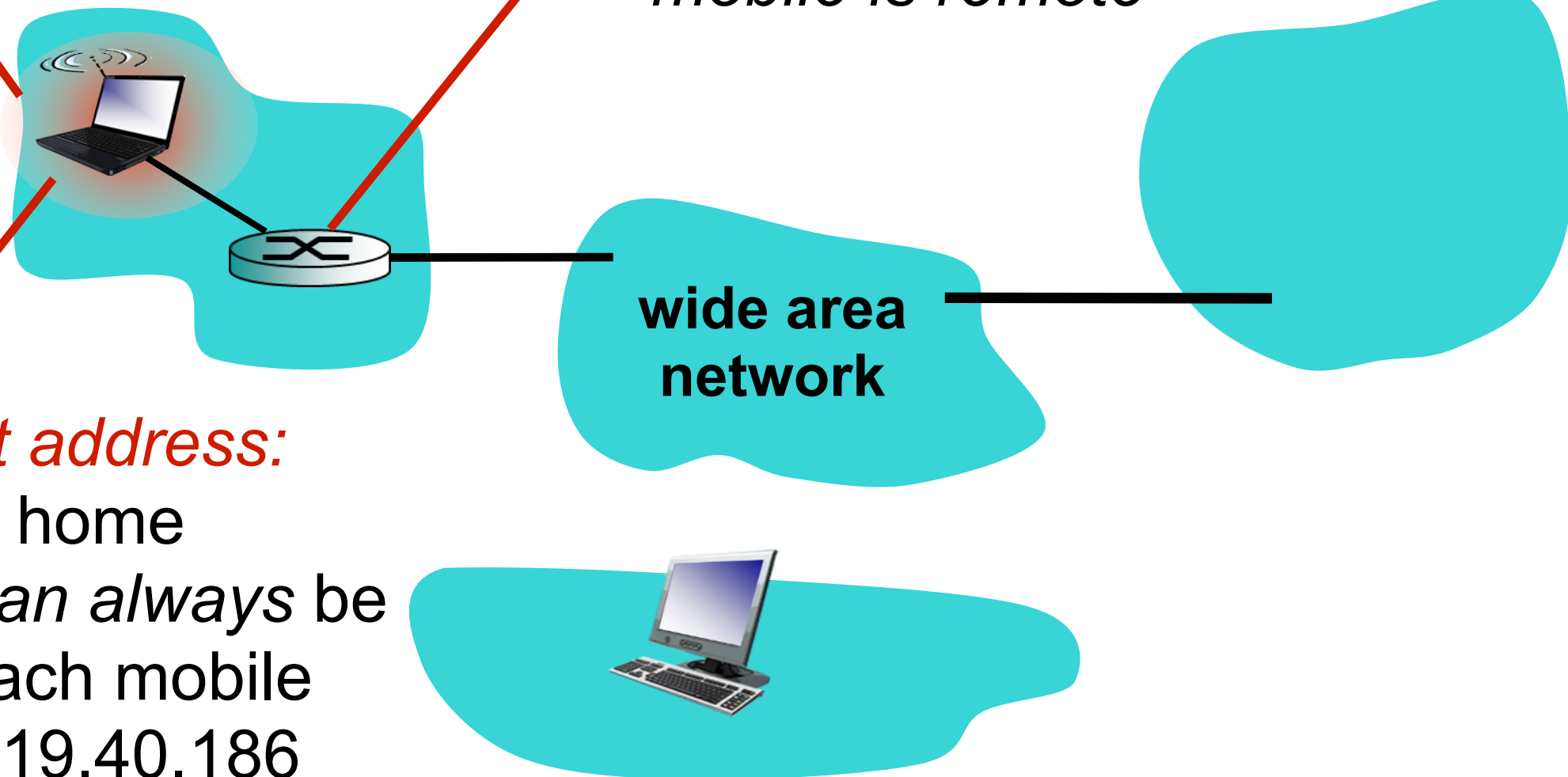


Mobility: vocabulary

home network: permanent “home” of mobile (e.g., 128.119.40/24)

home agent: entity that will perform mobility functions on behalf of mobile, when mobile is remote

permanent address: address in home network, *can always* be used to reach mobile e.g., 128.119.40.186



Mobility: more vocabulary

permanent address: remains constant (e.g., 128.119.40.186)

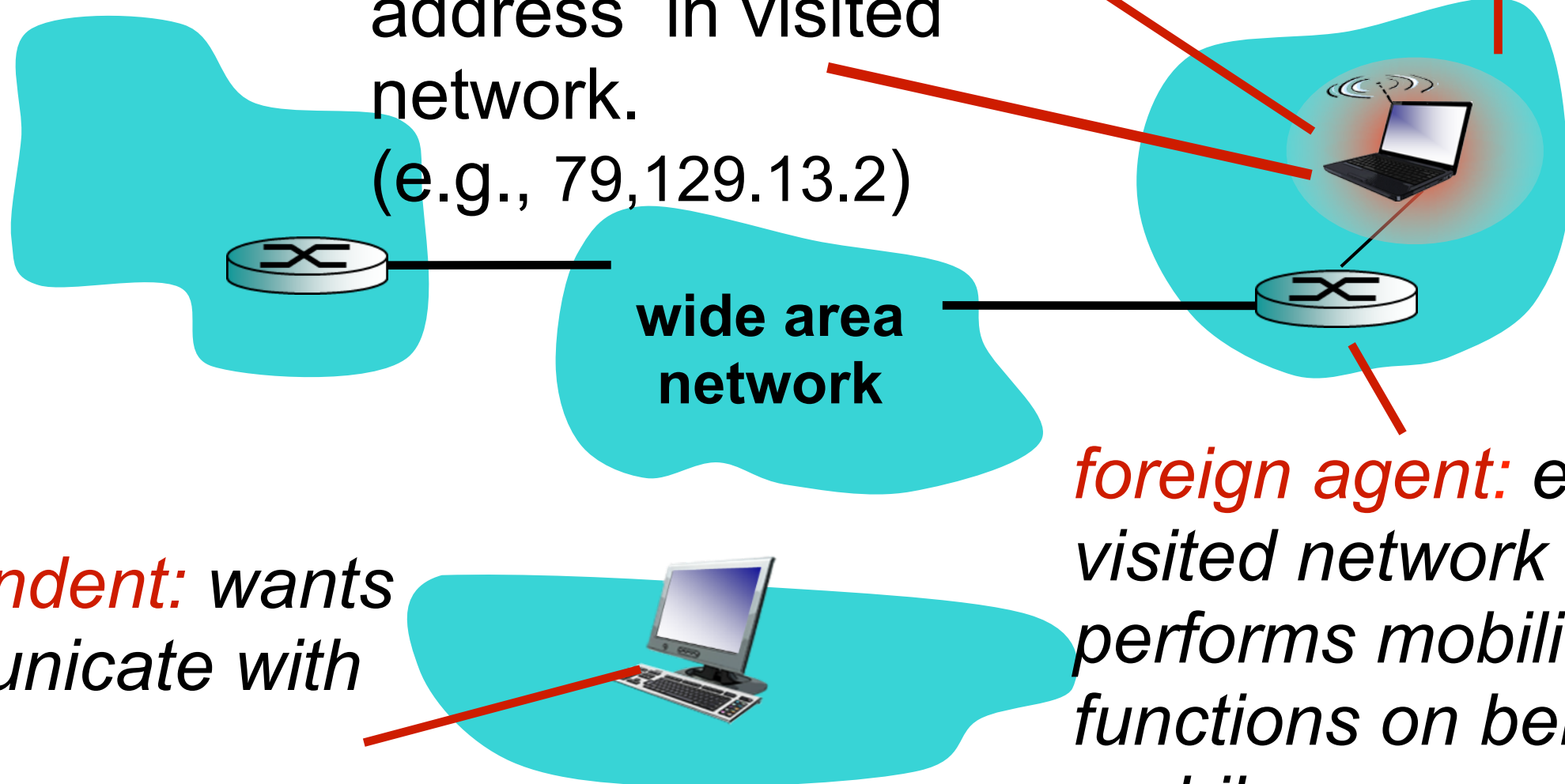
visited network: network in which mobile currently resides (e.g., 79.129.13/24)

care-of-address: address in visited network.
(e.g., 79.129.13.2)

wide area network

correspondent: wants to communicate with mobile

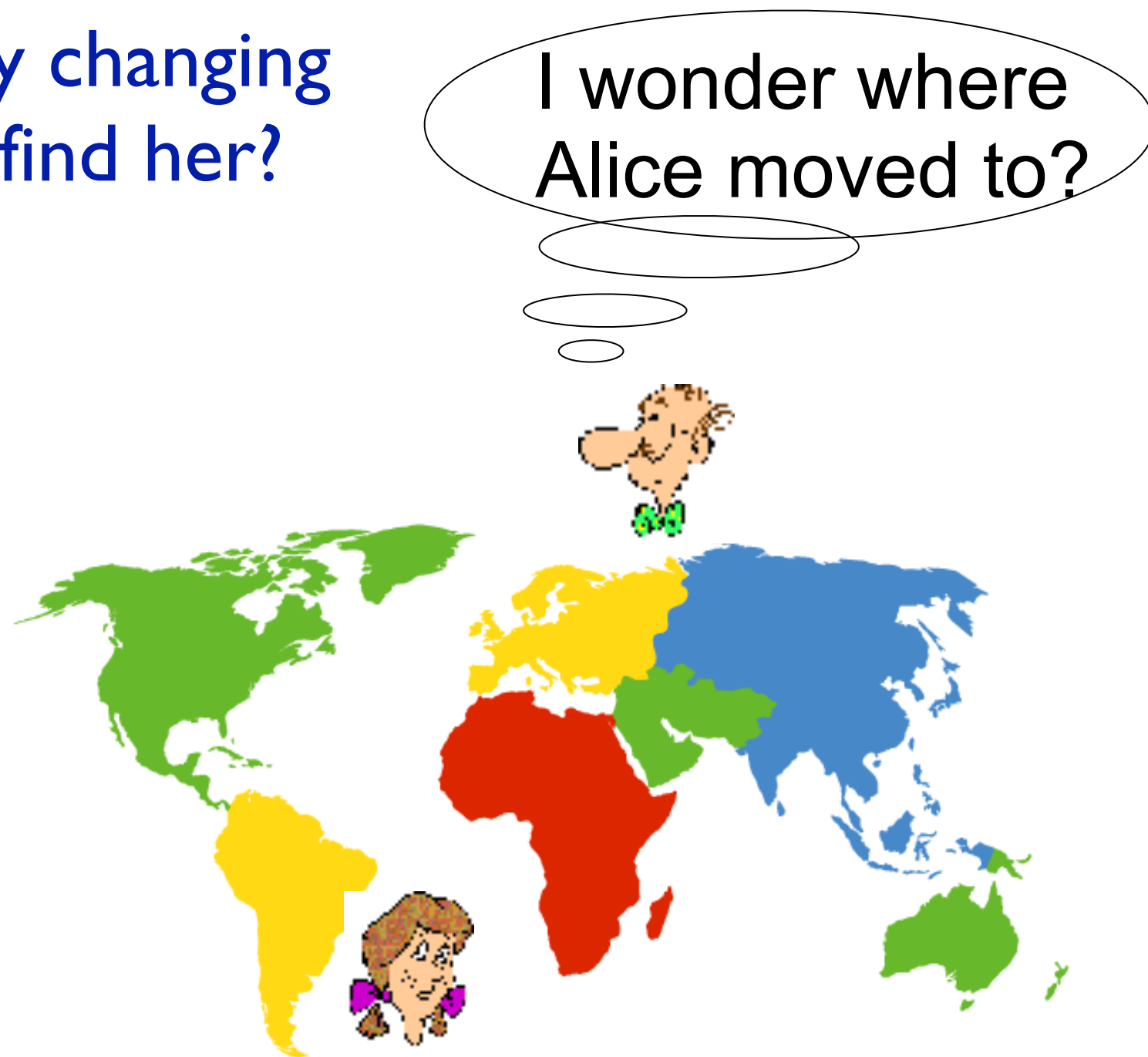
foreign agent: entity in visited network that performs mobility functions on behalf of mobile.



How do you contact a mobile friend:

Consider friend frequently changing addresses, how do you find her?

- search all phone books?
- call her parents?
- expect her to let you know where he/she is?



Mobility: approaches

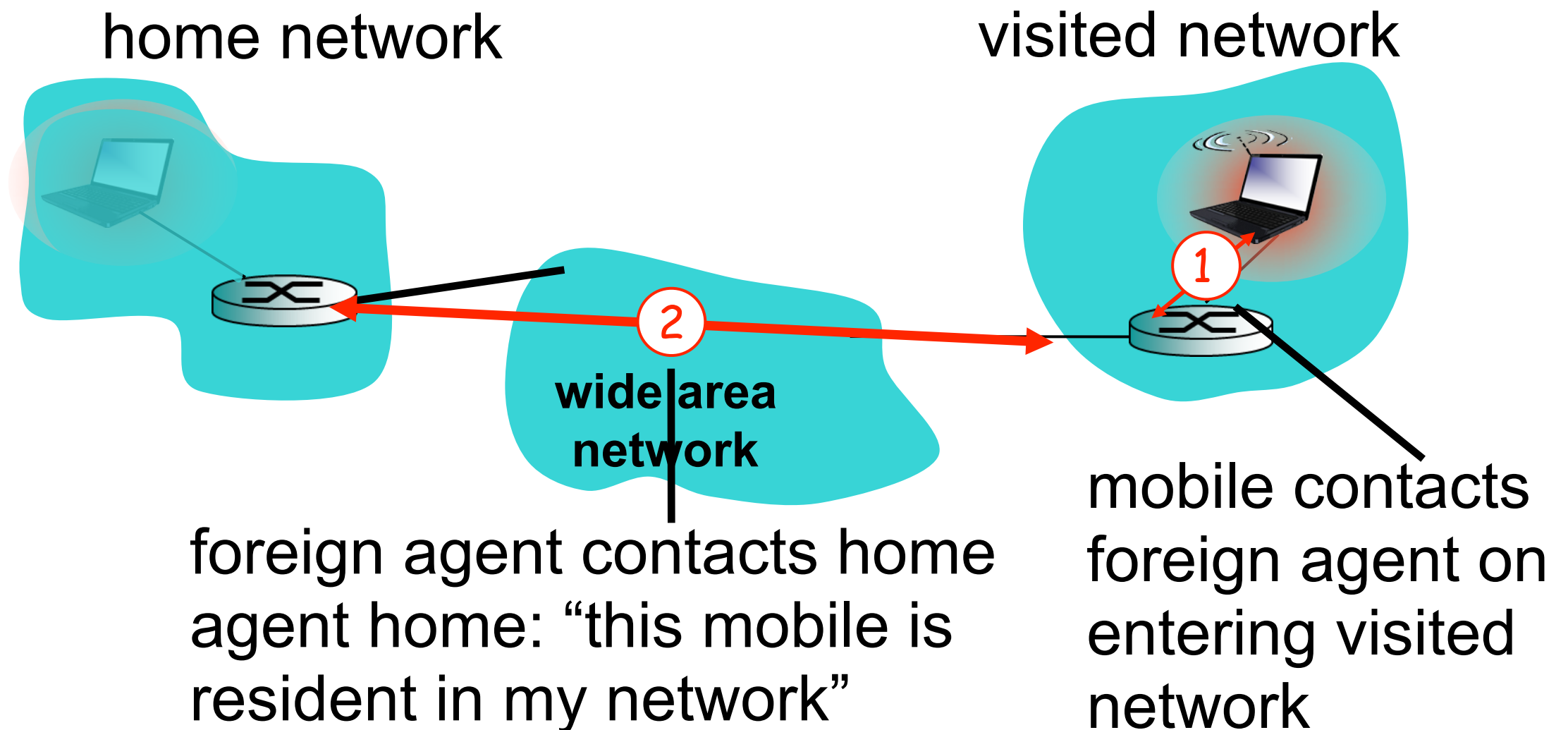
- *let routing handle it:* routers advertise permanent address of mobile-nodes-in-residence via usual routing table exchange.
 - routing tables indicate where each mobile located
 - no changes to end-systems
- *let end-systems handle it:*
 - *indirect routing:* communication from correspondent to mobile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

Mobility: approaches

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not
scalable
to millions of
mobiles

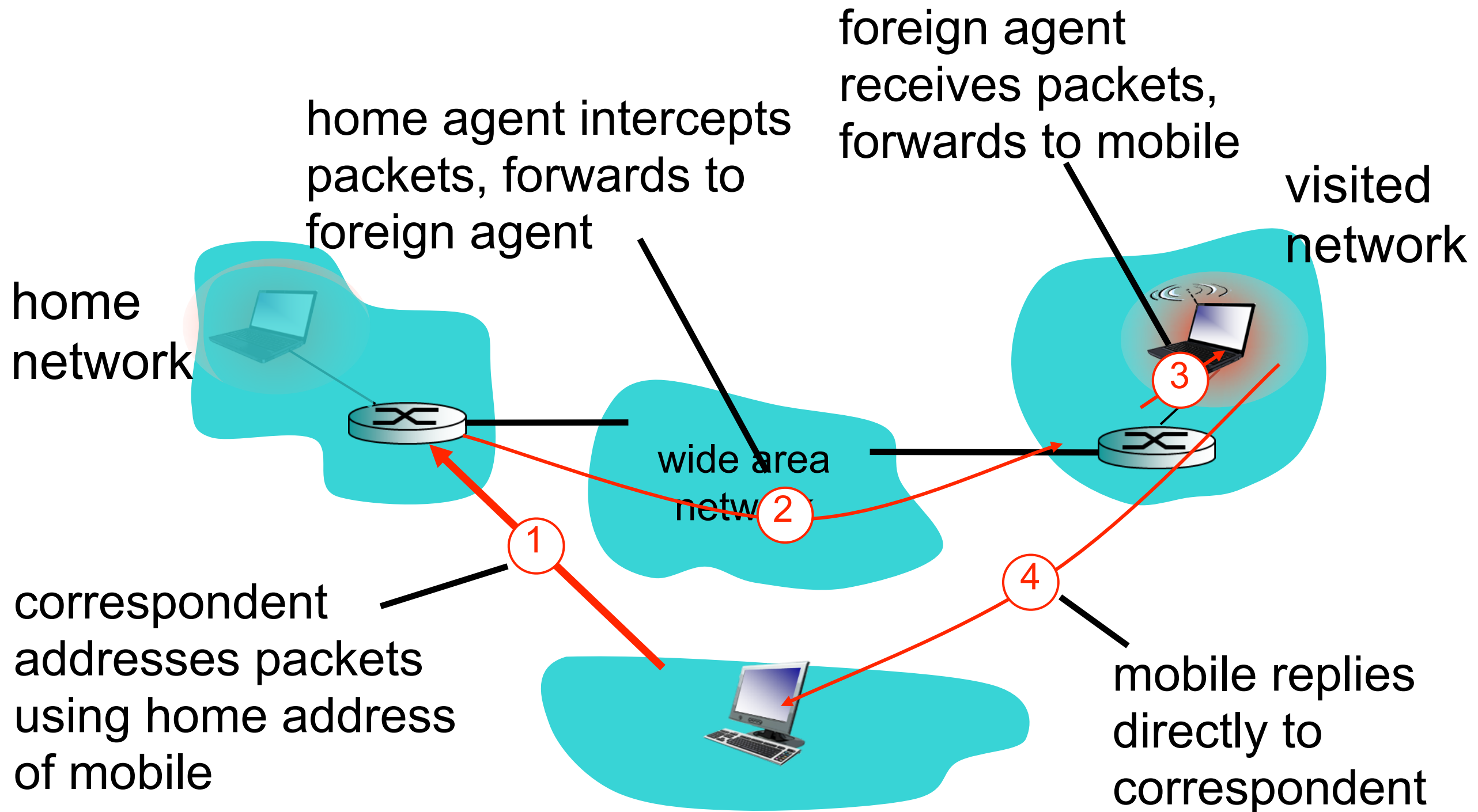
Mobility: registration



end result:

- foreign agent knows about mobile
- home agent knows location of mobile

Mobility via indirect routing



Indirect Routing: comments

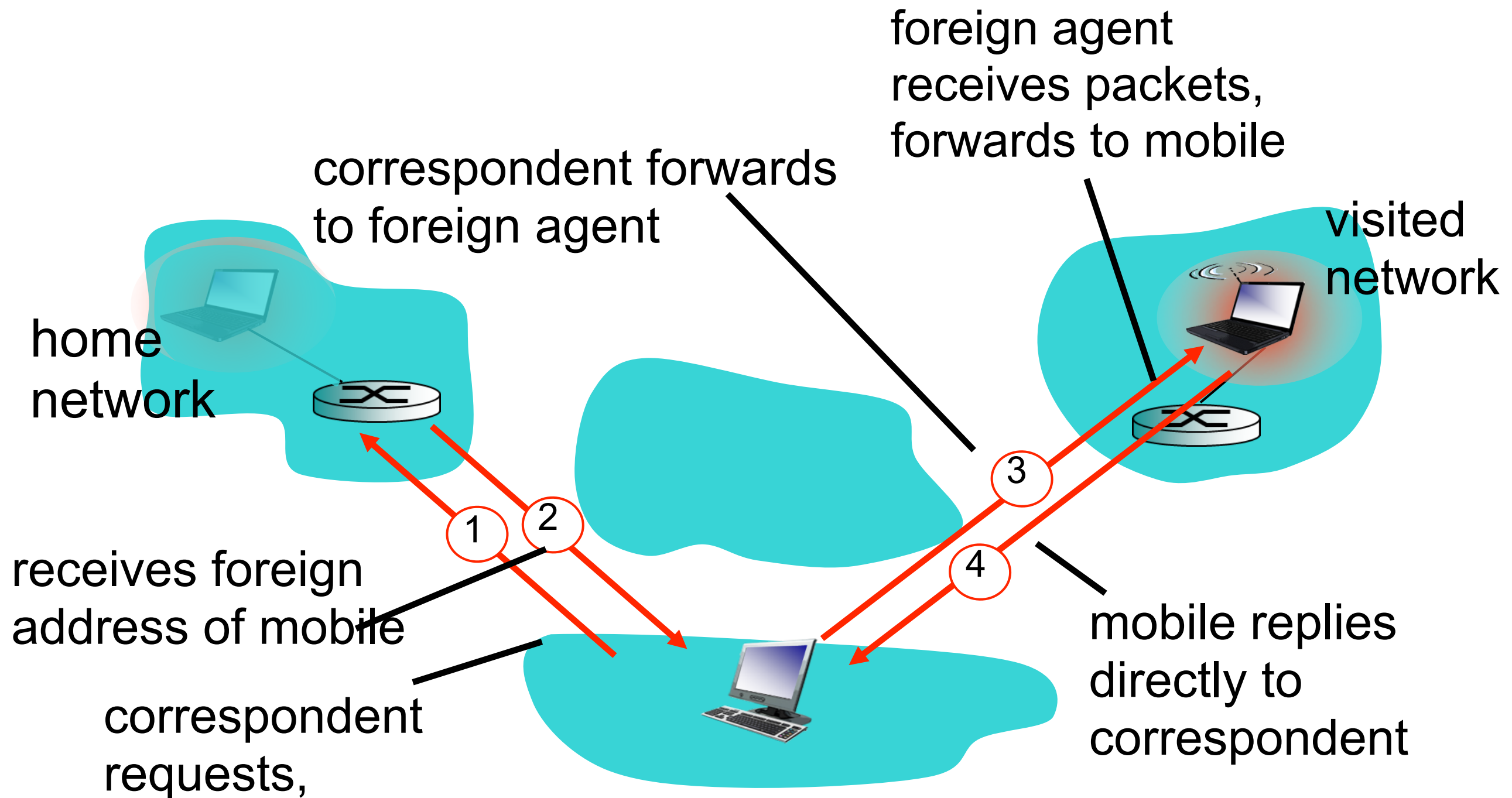
- mobile uses two addresses:
 - **permanent address**: used by correspondent (hence mobile location is *transparent* to correspondent)
 - **care-of-address**: used by home agent to forward datagrams to mobile
- foreign agent functions may be done by mobile itself
- **triangle routing**: correspondent-home-network-mobile
 - inefficient when correspondent, mobile are in same network



Indirect routing: moving between networks

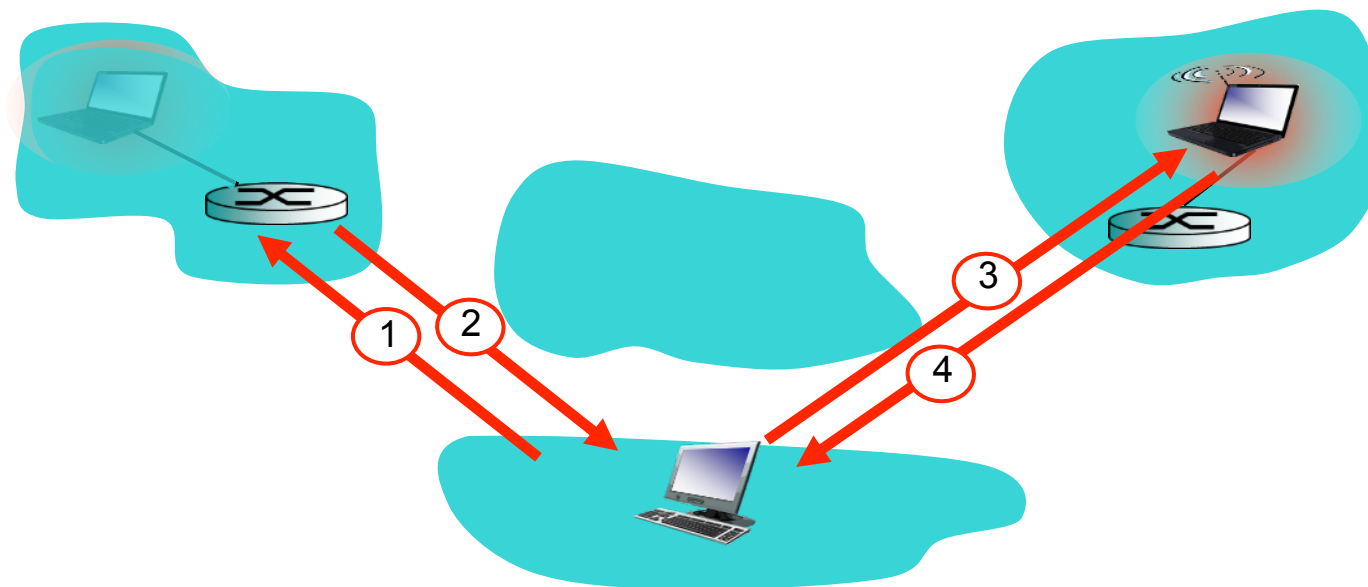
- suppose mobile user moves to another network
 - registers with new foreign agent
 - new foreign agent registers with home agent
 - home agent update care-of-address for mobile
 - packets continue to be forwarded to mobile (but with new care-of-address)
- mobility, changing foreign networks transparent: *on going connections can be maintained!*

Mobility via direct routing



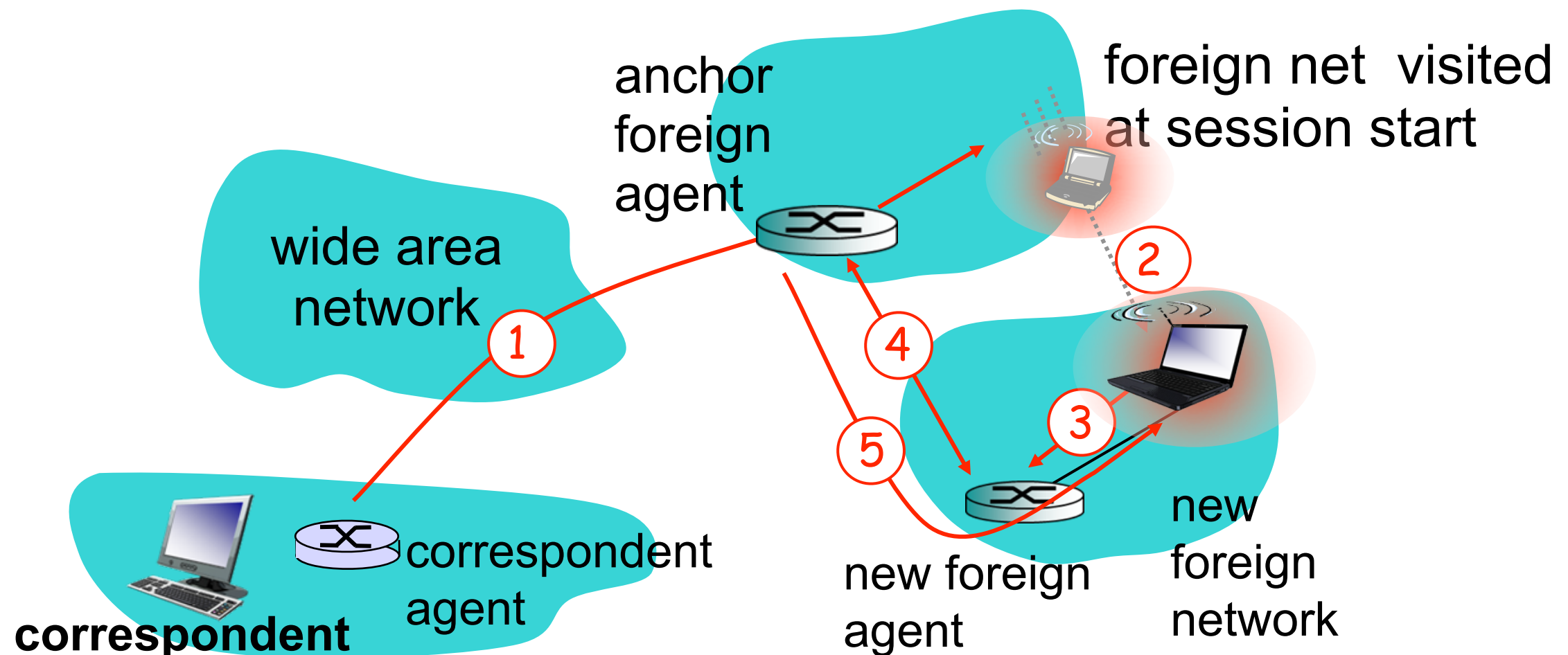
Mobility via direct routing: comments

- overcome triangle routing problem
- *non-transparent to correspondent*: correspondent must get care-of-address from home agent
 - what if mobile changes visited network?



Accommodating mobility with direct routing

- anchor foreign agent: FA in first visited network
- data always routed first to anchor FA
- when mobile moves: new FA arranges to have data forwarded from old FA (chaining)



Summary

- Mobility
- Vocabulary:
 - Home network, Visited network, permanent address,
 - Home agent, Foreign agent, Care of Address, Correspondent
- Routing: Indirect and Direct