MOBILITY MANAGEMENT PRINCIPLES

Group Members:

2021-SE-46

2021-SE-50

MOBILITY MANAGEMENT

- mobility in computer network mean moving of a node from one network to another network

Spectrum of mobility:

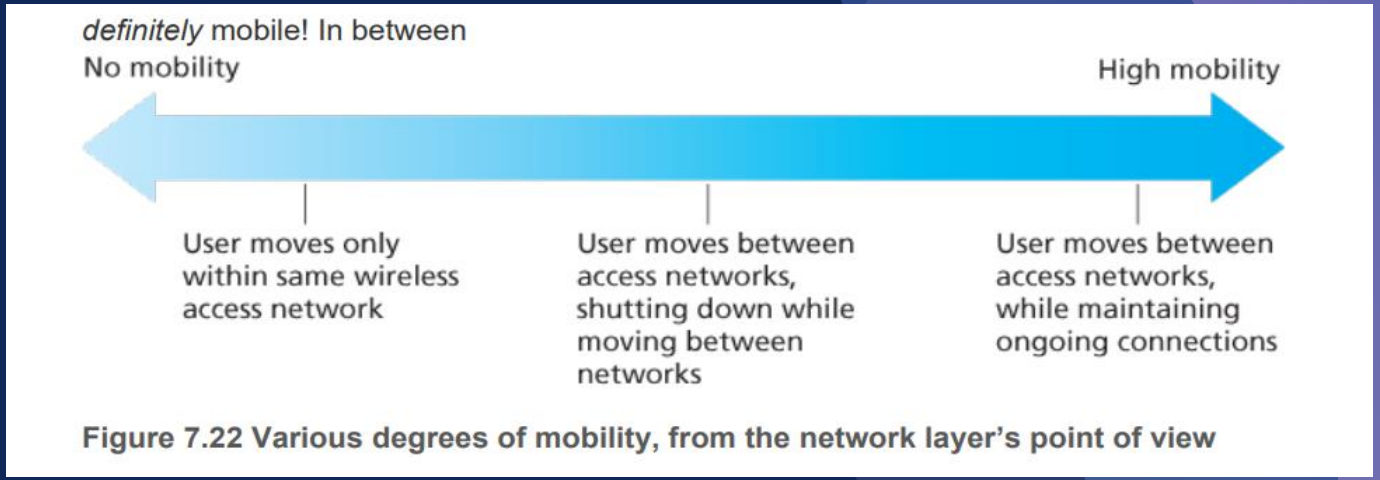


Figure 7.22 Various degrees of mobility, from the network layer's point of view

TERMINOLOGIES IN MOBILITY

- Home Network:

The home network is the permanent network to which the mobile node is associated.. The home network is responsible for managing the permanent address of the mobile node.

Example: Imagine your smartphone is configured to connect to your home Wi-Fi network. In this case, your home Wi-Fi network is the home network.

- Permanent address:

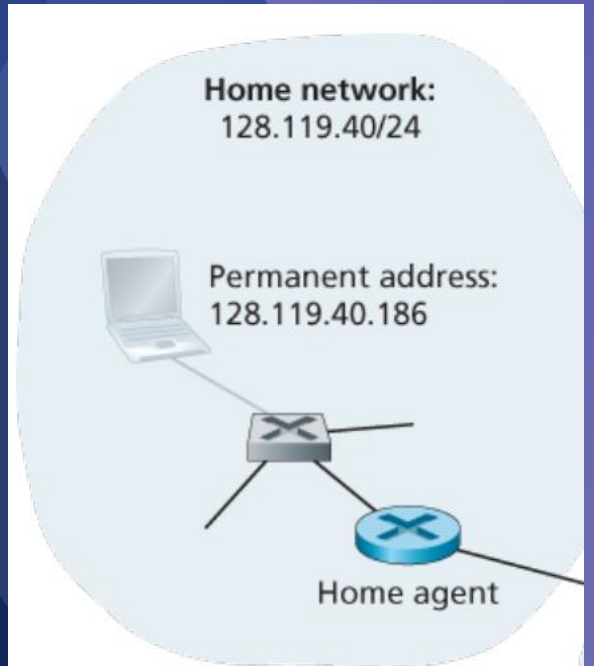
Address in home mobile can always be used to reach to mobile

Ex:128.119.40.186

TERMINOLOGIES IN MOBILITY

- Home agent :

The home agent is a network entity within the home network that performs mobility management functions on behalf of the mobile node. This includes tasks such as intercepting packets destined for the mobile node and forwarding them to its current location.



TERMINOLOGIES IN MOBILITY

- foreign Network:

The foreign network is the network in which the mobile node is currently residing. This could be the network of a colleague or a different company when the mobile professional is on a business trip.

- Care of address:

The address in visited network, you use until you are living in that place if you change the

location the care address also changes.

TERMINOLOGIES IN MOBILITY

- Foreign Agent (FA):

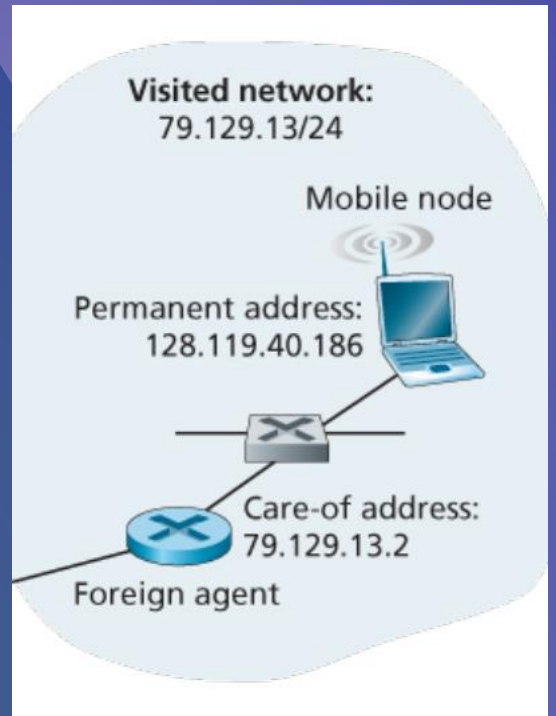
The foreign agent is a network entity within the visited network that assists the mobile node with mobility management functions. It helps the mobile node register its current location and forwards data to it when needed.

- Correspondent:

The correspondent is an entity that wishes to communicate with the mobile node.

This could be a server, another device, or any entity trying to establish communication

with the mobile node.



ROUTING TO A MOBILE NODE

IMPORTANT CONCEPTS

- Home Network

A mobile node's home network is the network where it is permanently connected and has a permanent home address.

- Home Agent

The home agent is a router on the home network that is responsible for keeping track of the mobile node's current location

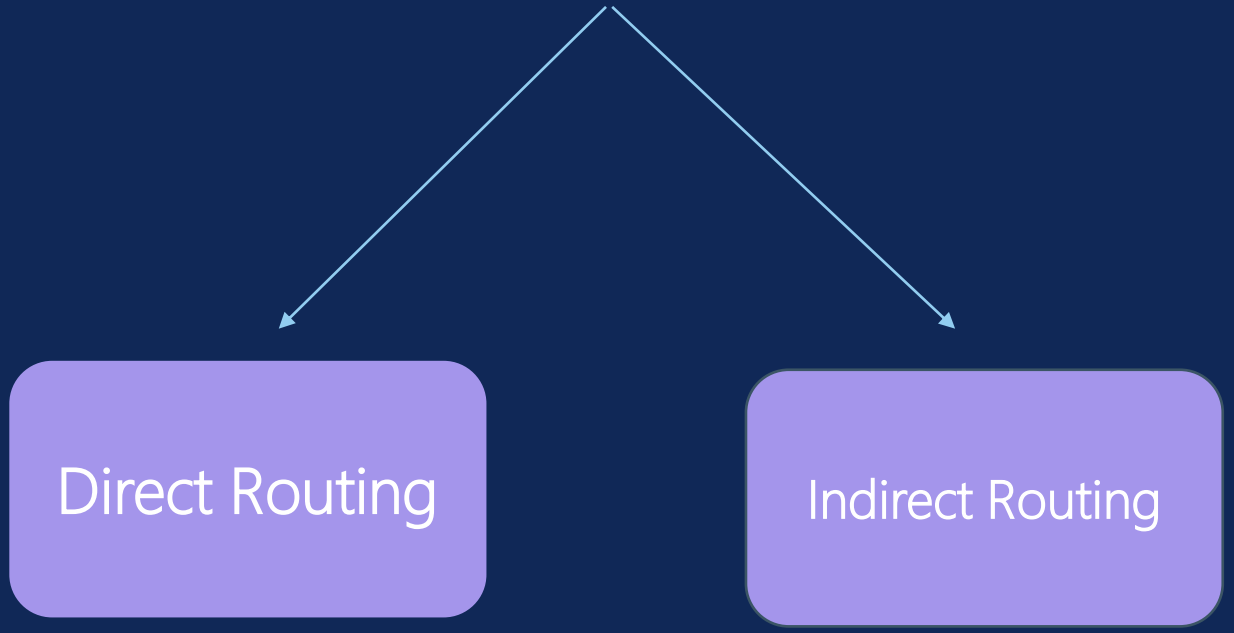
- Foreign Network
- Foreign Agent

1. A packet is sent to the mobile node's home address.
2. The home agent intercepts the packet and encapsulates it with the mobile node's current care-of address.
3. The encapsulated packet is sent to the foreign agent.
4. The foreign agent forwards the packet to the mobile node.

ROUTING TO A MOBILE NODE

Mobile Home
Agent is like hotel

ROUTING TO A MOBILE NODE

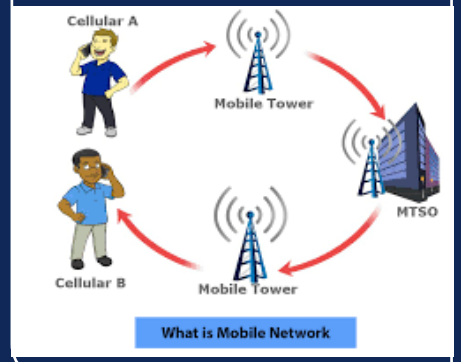


INDIRECT ROUTING

1. The correspondent sends a packet to the mobile node's home address.
2. The home agent intercepts the packet and looks up the mobile node's current location in its database.
3. The home agent encapsulates the packet with the mobile node's current care-of address.
4. The home agent forwards the encapsulated packet to the foreign agent.
5. The foreign agent decapsulates the packet and forwards it to the mobile node.
6. The mobile node receives the packet and processes it.

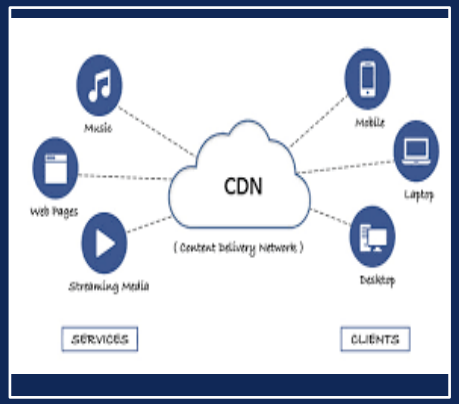
INDIRECT ROUTING

Cellular Networks



VPNs

CDNs



Caching

ADVANTAGES AND DISADVANTAGES OF INDIRECT ROUTING

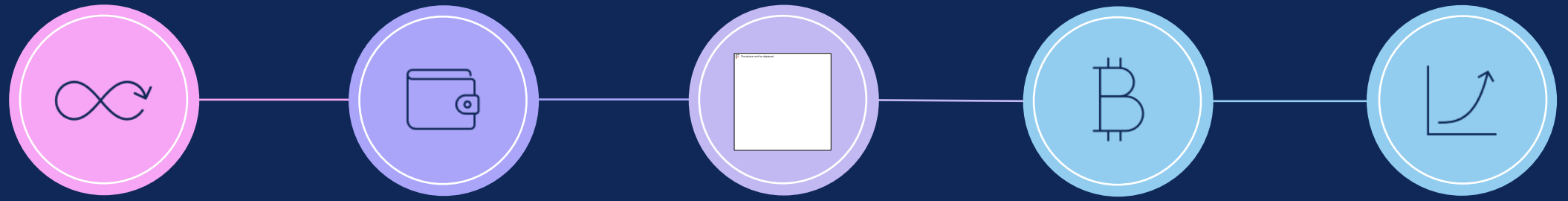
1. Reliable and secure routing mechanism
2. Efficient for mobile devices that move infrequently
3. No need for modifications to existing network infrastructure

1. Can introduce latency due to encapsulation and tunneling
2. May not be suitable for highly mobile devices
3. Requires coordination between home and foreign agents

DIRECT ROUTING

1. The correspondent sends a packet to the mobile node's current care-of address.
2. The mobile node receives the packet and processes it

DIRECT ROUTING



Voice Video Call

Streaming Apps

Gaming Apps

AWS Connect

MS Team

ADVANTAGES AND DISADVANTAGES OF DIRECT ROUTING

1. Faster and more efficient for highly mobile devices
2. Reduces latency compared to indirect routing
3. Suitable for real-time applications

1. Requires modifications to network infrastructure
2. May not be as secure as indirect routing
3. Can be more complex to implement and manage

THANK YOU