

Mobile Services

Problem #1: Mobile versus Fixed IT Services

What are the special problems and challenges one has to cope with when creating services for mobile users? Illustrate these problems in comparison to the circumstances in fixed networks! What, on the other hand, are advantages of mobile services in contrast to services for stationary users?

Problem #3: Mobility Support

What are the differences between the following functions: *location updating*, *handover*, *roaming*, and *paging*? Give a short definition of these functions!

Problem #3: Mobility Types

- a) Give a short definition of the terms *Terminal Mobility*, *Personal Mobility*, *Service Mobility* and *Session Mobility*. What are the differences? List key functions the underlying networks and other infrastructure components have to provide in order to support them!
- b) Explain the terms *Micro*, *Macro*, and *Global Mobility*! What layers of the OSI Reference Model are affected by them? Create an exemplary network topology to illustrate your answer!

Problem #4: Advanced Concepts for Mobility Management

Download the paper: Ian F. Akyildiz et al: Mobility Management in Next-Generation Wireless Systems,
http://mobiledata.cs.gc.cuny.edu/files/pub/akyildiz_mcnair_ho_uzunalioglu_wang_proc_ieee_1999_survey.pdf . The paper was written in 1999, that is, long before the introduction of today's 3G networks.

- a) Section III.A introduces the concept of hierarchical cell structures, which today are known under the term overlay networks. Give an example configuration of such an overlay network by using radio access technologies that are in operation today.
- b) Closely related with overlay networks is the distinction between vertical and horizontal handover procedures. Search the Web to find a definition for both of these terms and explain their differences.
- c) Why is a vertical handover a very sophisticated procedure and what makes it so difficult? What is the impact a vertical handover may have on services at the application layer?
- d) Read Section IV.B and IV.C. Sketch the modifications, extensions, and alternatives of and to the established location management procedures described there!