Abstract:
Adaptive middleware and wireless networks are hot topics in many discussions today. Literature describes many approaches that are based upon existing middleware technologies by adding functionalities for adaptive behavior. Disadvantage of these proceedings is the resulting dependence on the interface provided by the underlying middleware. This chapter will describe a whole new approach for adaptive middleware that is able to manage and organize a complex mobile wireless network on the one hand. On the other hand it interprets requirements of mobile services which run on top of it. These requirements of a mobile service are described within a meta information base which is content of the service. Using this additional information, the middleware adapts its behavior in order to optimize the performance of the entire network. To understand the behavior of the middleware this chapter will first give a short description of the structure of the middleware. In the following, four different abstraction layers will be classified, starting with a view upon the entire network, up next on the fine-tuning mechanisms within the middleware itself. Second, it will describe in detail a set of different adaption approaches within the four abstraction layers introduced before and show how these approaches are integrated into the middleware. In order to be able to handle the resulting adaptive behavior a network management mechanism will be described, which is used to select the best fitting approach for a given situation.