Approaches to an adaptive Middleware for Mobile Services

Abstract:
Adaptive middleware and wireless networks are hot topics in many discussions today. Literature describes a lot of approaches which are based upon existing middleware technologies by adding functionalities for adaptive behavior. Disadvantage of this proceeding is the resulting dependence upon the interface provided by the underlying middleware. This paper will describe a whole new approach for adaptive middleware which is on the one hand able to manage and organize a complex mobile wireless network. On the other hand it interprets requirements demanded from mobile services which are running on top of it. These requirements are described within a meta information base which comes along with a mobile service. Using this additional information the middleware adapts its behavior to optimize the performance of the complete network. To understand the behavior of the middleware this paper will first give a short description of the structure of the middleware. Subsequently it will classify four different abstraction layers starting with a view onto the entire network up to the fine-tuning mechanisms within the middleware itself. Afterward it will describe in detail a set the different adaption approaches within the four abstraction layers and show how these approaches are integrated into the middleware.