Design of a Concept for Providing Cross-Middleware-Connectivity in Dynamic Adaptive Systems

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Systems that implement a service-oriented architecture (SOA) inherently comprise services. Those systems often rely on a certain middleware to link services with consumers which forms the glue of the system. The middleware handles low-level system components like the operating system and the network stack, which lifts the burden of writing low-level code off the programmer shoulder. Thus, Changing the operating environment for different reasons can be done by only changing the middleware. Middleware provides API for the application level, which creates a coupling between the two. Consequently, switching the middleware and the use of a new one will lead to a change in application code. In addition, parts of the system that are using different middlewares will not be able to interact easily. Many solutions to these two problems have been suggested. In this work we will try to identify some of the solutions and pick some to tailor our own solution to middleware interoperability without the need to re-write low level code or dive into specific middleware aspects. This work focuses on the solution to middleware interoperability for DAiSI system. But the architectural model used is applicable to all scenarios where distributed systems or pervasive computing are concerned. The solution has been implemented and tested using two different middleware. Nonetheless, it can be extended to support more by creating an adapter using our predefined model.