A Context-Aware Architecture Supporting Service Availability in Mobile Cloud Computing

Mobile systems are gaining more and more importance, and new promising paradigms like Mobile Cloud Computing are emerging. Mobile Cloud Computing provides an infrastructure where data storage and processing could happen outside the mobile node. Specifically, there is a major interest in the use of the services obtained by taking advantage of the distributed resource pooling provided by nearby mobile nodes in a transparent way. This kind of systems is useful in application domains such as emergencies, education and tourism. However, these systems are commonly based on dynamic network topologies, in which disconnections and network partitions can occur frequently, and thus the availability of the services is usually compromised. Techniques and methods from Autonomic Computing can be applied to Mobile Cloud Computing to build dependable service models taking into account changes in the context. In this work, context-aware software architecture is proposed to support the availability of the services deployed in mobile and dynamic network environments. The proposal is based on a service replication scheme together with a self-configuration approach for the activation/hibernation of the replicas of the service depending on relevant context information from the mobile system. To that end, an election algorithm has been designed and implemented.