FAULT TOLERANCE AND RESOURSES ECONOMY IN A SYSTEM OF MITIGATION OF SINISTERS

ABSTRACT

In this work we discuss the use of two fault-tolerance models that can help to avoid data loss due to failures in an ad hoc mobile network environment. As the basis for this study a system for team support in catastrophic contexts is used. The studied models are: i) Backup Copy, that keeps a up-to-date copy of the sensitive data in one or more hosts and ii) On-Demand Replication, where each device monitors its state, replicating its sensitive data when detecting an imminent failure. We analyze the efficiency for each technique related to failures and the number of messages that they need to work. In a complementary way to the fault-tolerance models, we study the use of Cooperative Cache, allowing devices to cooperate among each other to keep and share copies of remote data. The objective of this technique is to save energy used in locating and routing the data to the reader device. The objective of this dissertation is to demonstrate that the use of Cooperative Cache together with On-Demand Replication can help to save resources. This strategy allows to extend the energy lifetime for the devices and to achieve fault-tolerance at a relatively low-cost.