

The Design and Implementation of Persistent Transactions in an Object Database System

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Abstract

Powered by high-performance networked workstations, the emerging new generation of object database systems has greatly enhanced the power of a collaborative groupware environment. There is a common view among engineers that the classic transaction model is unsuitable for such a collaborative design environment. The long life-span of a typical design transaction, as well as other operational characteristics of a design process, challenge the suitability of the three basic properties - atomicity, durability, and consistency - of the classic transaction model. We present an alternative model of *persistent transactions* which is specifically designed to handle long-duration collaborative design activities. Through the integration of a checkin/checkout model and persistent locks, a persistent transaction overcomes the difficulties of a classic short transaction. Unlike the nested transaction models which have been proposed for similar reasons, our model focuses on the collaborative aspects of design transactions, such as change notification. To demonstrate the practicality of the persistent transaction model, we also describe an implementation of the persistent transaction model in a distributed object database system.