EX5 Replicated Models

Business Client-Server System

This model represents a data-entry system of a large company, feeding two databases. It was used as a key example in Amy Pan’s thesis Solving Stochastic Rendezvous Networks of Large Client-Server Systems with Symmetric Replication, by Amy M. Pan, 2001, and in the thesis by Al-Omari ref below.



System layout.

Replication is fully symmetric, so each replicated task has exactly the same environment and has caller/called relationships either to the same task, or to a replica of the same task. For any call, fan-out is the number of replicas of the called task, that are called; fan-in is the number of replicated callers, that make the call.



LQN Diagram: K = replication level, F overbar = fanout, F = fanin of calls



Demand parameters of the model

Air Traffic Control System

This model describes an air traffic control system with replication and quorum consensus for reliability,

taken from Performance Modeling of Replication Techniques in Parallel and Distributed Layered Service Architectures by Tariq Al-Omari, PhD thesis, 2007, Chapter 8.

