Abstract

In distributed system common global clock and shared memory does not exist, so knowledge is shared by passing messages between several sites. Reliable broadcast eventually delivers messages to all participating sites. Total order broadcast ensures that all messages must be delivered to all sites in same order and it is a stronger notion of reliable broadcast [1]. Event-B is based on set theory and used event driven approach. For system-level analysis and modeling Event-B is a formal technique. In this technique system is gone through several stages for refinement [7,9]. To specify total order broadcasting, introduce privilege based algorithm and refine it at the refinement level that only owner of the token can broadcast the messages in privilege based algorithm and detect failures like messages having same sequence number, token is not present for broadcasting a messages, higher sequence number message is delivered before lower one.
Formal Analysis of Privilege based Total Order Broadcast System

- Louise E. Moser and P. M. Melliar–Smith, Byzantine Resistant Total Ordering Algorithms.
- Emili Mides, Frances D- Adding Priorities to Total Order Broadcast Protocols, 2007
- Nilima Fulmare and Divakar Yadav, Rigorous Analysis of Byzantine Immune Causal Order using Event-B.
- Divakar Yadav and Michael Butler, Formal Specifications and Verification of Message Ordering Properties in a Broadcasting Using Event-B
- Raghuraj Suryavanshi and Divakar Yadav, Formal Development of Byzantine Immune Total Order Broadcast System Using Event-B. 2012
- Michael Butler, Relations in B, University of Southampton Lecture Notes.

Index Terms

Computer Science

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Keywords

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