

File Replication, Maintenance, and Consistency Management Services in Data Grids

Chao-Tung Yang, Chun-Pin Fu, 許慶賢
Computer Science & Information Engineering
Computer Science and Informatics
chh@chu.edu.tw

Abstract

Data replication and consistency refer to the same data being stored in distributed sites, and kept consistent when one or more copies are modified. A good file maintenance and consistency strategy can reduce file access times and access latencies, and increase download speeds, thus reducing overall computing times. In this paper, we propose dynamic services for replicating and maintaining data in grid environments, and directing replicas to appropriate locations for use. To address a problem with the Bandwidth Hierarchy-based Replication (BHR) algorithm, a strategy for maintaining replicas dynamically, we propose the Dynamic Maintenance Service (DMS). We also propose a One-way Replica Consistency Service (ORCS) for data grid environments, a positive approach to resolving consistency maintenance issues we hope will strike a balance between improving data access performance and replica consistency. Experimental results show that our services are more efficient than other strategies.

Keyword : File replication · Dynamic maintenance · Consistency management · Data grids