

A high availability cluster-based replica control protocol in data grid

ABSTRACT

Data replication is widely used to provide high data availability, and increase the performance of the distributed systems. Many replica control protocols have been proposed in distributed and grid environments that achieved both high performance and availability. However, the previously proposed protocols still require a bigger number of replicas for read and write operations which are not suitable for a large scale system such as data grid. In this paper, a new replica control protocol called Clustering-based Hybrid (CBH) has been proposed for managing the data in grid environments. We analyzed the communication cost and data availability for the operations and compared CBH protocol with recently proposed replica control protocols called Dynamic Hybrid (DH) protocol and Diagonal Replication in 2D Mesh (DR2M) protocol. To evaluate CBH protocol, a simulation model was implemented using Java. Our results show that for the read operations, CBH protocol improves the performance of communication cost and data availability compared to the DH and DR2M protocols.

Keyword: Data replication; Grid computing; Data availability; Communication cost