Abstract

Now a day's replication is an effective approach to improve the efficacy of distributed system, where large amount of data (terabytes or peta-bytes) is handled. An efficient replica technique is more effective than a shared distributed system (network attached storage, object based storage and storage area network) and common access point. In a distributed system, data access time depends on unreliable network bandwidth especially in desktop grid. The data
transfer is a major bottleneck in data intensive distributed grid environment due to high latency and low and unreliable bandwidth. In such an environment, an effective scheduling and effective replica technique can reduce the amount of data transfer across the internet by dispatching a job to a node where the required data are present for its operation. As the computing scale and the amount of data involved in grid applications is increasing exponentially, which causes grid resources to wait for long time period for data transfer when the involved data is saved in the remote nodes. This degrades the overall system performance. Using the file sharing mechanism in a distributed file system with a replica technique or by using a nature inspired meta-heuristic optimization technique system performance can be improved. In case of file sharing mechanism with replication techniques data can be processed in parallel. In this paper we proposed a novel combined model for data replication and job scheduling for the desktop grid environment. A reliability based replica management technique is proposed for the distributed grid environment in such way that overall data transfer is minimized. An adaptive technique is proposed for job scheduling which considers the parameters like node efficiency value, past execution history from execution log and node locality value (is a weighted parameter, depending upon the availability of replica).

References


A Combined Replication-Adaptive Scheduling Model for Desktop Grid Environment


Index Terms

Computer Science
Distributed System
Keywords
Heuristics  Data Replication  Adaptive  Desktop Grid  Distributed Systems  Reliability.