Dynamic Replication Algorithm In Data Grid

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Abstract

A data grid system enables scalable data transfer services across multiple remote locations as well as dependable access to massive amounts of data and storage resources. This thesis offers comprehensive performance investigation of the dynamic replication algorithm to optimize data gird distribution of the grid copies pertinent data by determining the best scheduling algorithms, Optimizers Algorithms, and Access Pattern Generators. Random, Queue Length, access cost for current job and Queue access cost for current job are the four scheduling algorithms that was tested. Simple Optimizer, Least Recently Used Optimizer, Least Frequently Used Optimizer and EcoModelOptimiser are four Optimizers Algorithms that were tested. Sequential Access Generator, Random Access Generator, Random Walk Unitary Access Generator and Random Walk Gaussian Access Generator are four Access Pattern Generators that were tested. Evaluation done using network simulation (OptorSim) based on the following Performance Evaluation Metrics: The Mean Job Execution Time , Efficient Network Usage, Computing Element Usage and Replications Number. The obtain results show

that the RandomWalkUnitaryAccess is the best Access Pattern Generators, Least Frequently Used Optimiser Optimizer is the best Optimizers Algorithms and Queue access cost for current job schedulers is the best scheduling algorithms.

Keywords: Data replication, Data grid, scheduling algorithms, Optimizers Algorithms, Access Pattern Generators.