Managing Database Replication Using Binary Vote Assignment on Grid Quorum with Association Rule

A. Noraziah¹,², Ainul Azila Che Fauzi¹, Sharifah Hafizah Sy Ahmad Ubaidillah¹, Zailani Abdullah³
Roslina Mohd Sidek¹, Mohammed Adam Ibrahim Fakhreldin⁴
¹Faculty of Computer Systems & Software Engineering, Universiti Malaysia Pahang, 26300 Kuantan, Pahang.
²IBM Centre of Excellence, Universiti Malaysia Pahang, 26300 Kuantan, Pahang.
³Faculty of Business & Entrepreneurship / Center of Computing & Informatics, Universiti Malaysia Kelantan, City Campus, 16100 Kota Bharu, Kelantan.
⁴Faculty of Computer Science and Information Systems, Jazan University, PO Box 114, Saudi Arabia

Nowadays, many organizations deploy the database application systems in order to manage their business operation. Administrations is required to deliver up to date data to users who live distantly, thus replicated databases can be one solution to increase the business operations performance in the distributed environment. Even though data availability is increased, common existing replication strategies neglect the correlation among the different data files in a Distributed Database Systems. In this paper, Binary Vote Assignment on Grid Quorum with Association Rules (BVAGQ-AR) has been proposed to manage the database replication. This technique combines data replication and data mining approaches in order to decrease the job processing time. The result shows that BVAGQ-AR has the lowest job processing time compared to other techniques. BVAGQ-AR performs 66.548 ms to complete a transaction compared to BRS with 137.157 ms, HRS with 257.928 ms, and ROWA with 262.243 ms. From the results, it is proved that managing replication and transaction through the proposed BVAGQ-AR able to preserve data consistency with low job processing time.

Keywords: Replication, Distributed Database, BVAGQ-AR, Data Mining, Data Grid, Computational Intelligences

1. INTRODUCTION

Improving the data management is one of the biggest challenge that Data Grid users have to face today. Many organizations deploy the integrate database application systems in order to manage their business operation as such Operational Submission Centre use Building Submission Checklist Systems¹, Adaptive Intelligent Web Based Education System² and River Basin

Email Address: noraziah@ump.edu.my

Information System³. Administrations is required to deliver up to date data to users who live distantly and also deal with numerous numbers of data requested from various servers in distributed environment. Thus, data storing, data readiness, reliability and consistency are among significant subjects to be noticed in order to make sure scattered users can proficiently and securely access data from various different servers. One approach to