ABSTRACT

A database system is one of the computer systems which offers efficient data storage facilities to applications. Scalability and performance are the key problems as the database system gets bigger. When a database system increases from a smaller system to a larger system, the performance is degraded and one point performance can become a bottleneck in the database system. Because of this, much research has been done in these areas of database systems. Replication is one of the efficient ways to increase the performance of the database system by separating out the database and maintaining it on different servers. This thesis presents a novel database replication algorithm. The main idea behind the algorithm is to reduce the latency in database replication while maintaining very high throughput. The work has been evaluated under various traffic load conditions. It has been shown that the distribution of the load to the various servers can increase the throughput and reduce the waiting time latency. Techniques have also been suggested to maintain the throughput with minor increase in the average delay in a case when load cannot be distributed on various servers. The effects of the server buffering capacity on throughput and average delay are also discussed. The performance of the proposed algorithm has been done using Monte Carlo simulation. Simulation results are used to portray the throughput and average delay.

Keywords: Database Replication; Networks; Throughput and Average Delay