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EFFECTIVE USE OF STORAGE AVAILABLE ON PCS IN A LAB ENVIRONMENT

S. Yamuna, T. Tharmini, Ziyan Maraikar

*Department of Computer Engineering,
Faculty of Engineering, University of Peradeniya*

In many departments, a quota system is used to divide storage among the users due to the limited amount of storage available. A problem occurs when a user exceeds the maximum allocated space. Our aim is to provide a solution to manage the storage in such a network. Even though there are many existing distributed storage systems in the world such as Bit Torrent, BigTable, Wuala, etc, this is a distributed storage system for a particular Local Area Network (LAN), consisting of many PCs.

The ultimate goal of this project is to optimize the use of resources available in order to resolve the storage problem. About 60% of storage space is not used in our department's laboratory computers as the operating system occupies only a small amount of hard disk. Thus, the proposed system uses those unused storage spaces as nodes, but the whole system appears to outside as common storage. The system consists of two major components, a centralized database and storage nodes. The Lab machines are considered as storage nodes and a server is operated as a centralized database to keep a record of all the transactions and the details of each machine. In order to provide replication facility, our system stores the file in two nodes. Therefore the system will be capable of retrieving the data even if one node goes down or offline. This ensures safe keeping and load balancing.

Currently the system is capable of updating the database periodically, file transferring and retrieving files. However, there is no guarantee of security, because the system does not use encryption method. Another drawback is transferring of large files. In order to transfer a file successfully, the size of that file should be less than the free space on a single machine. But it is possible to enhance the system to transfer a larger file by splitting the file and store in multiple nodes, and then combine the sub-files together at retrieval. The actions such as encryption, splitting and merging are not implemented in the current system and will be incorporated in the next phase of this project.