LanStore: a highly distributed reliable file store

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ABSTRACT

Nowadays it is an accepted and popular paradigm to create clusters of personal computers to utilize its CPU and storage capacity. The goal of the LanStore project is to create a highly reliable, fully decentralized storage system which can be composed from already existing desktop machines. Reliability is achieved by the help of a traditional erasure coding algorithm, the Reed-Solomon algorithm which generates *n* error correcting code pieces for every *m* data pieces. The distributed behavior is controlled by a voting based quorum algorithm. Our solution supports both IPv4 and IPv6. For the implementation platform the Windows family and the .NET framework was selected as the most popular platforms in university departments and offices. The software is now in alpha stage. We measured its performance and the results showed that this solution can provide a throughput comparable to the currently used network file systems depending on error correcting capability, the number of failing machines and the performance of the client machine. In special situations such as video on demand with high client number our solution can outperform the traditional single server solutions.

Keywords: distributed system, distributed storage, erasure codes, multicast