Dynamic Replica Creation Strategy Based on File Heat and Node Load in Hybrid Cloud

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Abstract— Replica creation strategy is one of the important research directions of the distributed file system in the hybrid cloud environment. However, traditional replica creation strategy just simply calculated the file heat based on the number of accesses to the file within a period of time. Besides, creating too many copies will seriously affect the performance of the node without considering the node load. In order to solve this problem, the improved dynamic replica creation strategy based on file heat and node load is presented in this paper combined with the characteristics of the hybrid cloud environment. File heat of history and current access frequency of three cycles and change rate of file are considered comprehensively in the calculation of the heat based on LRFU(Least Recently Frequently Used). Combined with the node load, the average heat and the average load are used to adjust the number of copies in this paper, which can adapt to the changes of the environment dynamically. Experiments show that with changes of file access and traffic intensity, the improved strategy is sensitive to access frequency, which can adaptively adjust the number of copies, reduce the average response time, and achieve better load balance of cluster.

Keyword— Hybrid cloud, Replicas, File heat, Node load, Load balance

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