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Abstract

Cloud Computing is a novel computing paradigm which is recognized as an arbitrary to traditional reference technology right to its intrinsic resource-sharing and low-maintenance characteristics. One of the virtually fundamental services offered by CSPs (Cloud Service Providers) is cloud storage. To increasing reliability and efficiency of data storage in the cloud the technique used is replication but its drawback is data loss and higher space consumption. One way to increase the data reliability and reducing the storage space in the cloud is Erasure Coding. In Erasure Coding, the data is fragmented and further encoded mutually into data pieces and stored in different locations. The arbitrary benefit of the Erasure Coding is that the corrupted data can be absolutely reconstructed into separate information. Erasure code comprises of two coding techniques regenerating code and locally repairable code. Regenerating Code is used for balancing storage space and its bandwidth. The Locally repairable code is the technique used to overcome the Disk I/O overhead in the Cloud Storage. But applying erasure code in cloud storage increases access time. So this paper explored the storage space efficiency of erasure codes and the repair traffic efficiency of replication. As a

new area of research in replication and erasure coding technique can be combined using for data storage in the cloud for enhancing its overall efficiency.

References

1. “Jun Li” and “Baochun Li”,”Erasure Coding for Cloud Storage Systems: A Survey”,TSINGHUA SCIENCE AND TECHNOLOGY ISSNll1007-0214ll06/11llpp259-272 Volume 18, Number 3, June 2013.
2. “S.-Y. R. Li”, “R. W. Yeung”, and “N. Cai”, Linear network coding, IEEE Trans. on Inform. Theory, vol. 49, no. 2, pp. 371-381, 2003.
3. IDC says world’s storage is breaking Moore’s law, more than doubling every two years, http://enterprise.media.seagate.com/2011/06/insideit-storage/idc-says-worlds-storage-is-breaking-mooreslaw-more-than-doubling-every-two-years/, 2012.
4. “A. W. Kosner”, Amazon cloud goes down Friday night, taking Netflix, InstagramAndPinterestwithit, http://www.forbes.com/sites/anthonykosner/2012/06/30/amazon-cloud-goes-down-friday-night-taking-netflixinstagram-and-pinterest-with-it/, Forbes, June 30, 2012.
5. “B. Calder”, “J. Wang”, “A. Ogus”, “N. Nilakantan”, “A. Skjolsvold”, “S. McKelvie” and “Y. Xu”, Windows Azure storage: A highly available cloud storage service with strong consistency. InSymposiumonOperatingSystemsPrinciples, 2011.
6. “D.Borthakur”. The Hadoopdistributedfilesystem: Architecture and design. http://hadoop.apache.org/common/docs/current/hdfs-design.html, 2009.
7. “B. Fan”,” W Tanisiriroj”, “L. Xiao”, and “G. Gibson”, “ DiskReduce: RAID for data-intensive scalable computing: In Parallel Data Storage” Workshop, 2008.
8. D. Ford, F. Labelle, F. .I. Popovici, M. Stokely, V.-A. Truong, L. Barroso, C. Grimes, and S. Quinlan. Availability in globally distributed file systems. In Operating Systems Design and Implementation, 2010.
9. B. Schroeder and G. Gibson. Disk failures in the real world: What does an MTTF of 1,000,000 mean to you? In Conference on File and Storage Technologies, 2007.
10. “A.L.Drapeauetal”, RAID-II:Ahigh-bandwidthnetwork file server. In International Symposium on Computer Architecture, 1994.
11. S. Ghemawat, H. Gobioff, and S. Leung. The Google file system. In ACM SOSP, 2003.
12. J.S.Plank,J.Luo,C.D.Schuman,L.Xu,andZ.WilcoxOHearn. A performance evaluation and examination of open-source erasure coding libraries for storage. In Conference on File and Storage Technologies, 2009.
13. “Roy Friedman” and “Yoav Kantor” , “Israel and Amir Kantor” , “Replicated Erasure Codes for Storage and Repair-Traffic Efficiency” Israel 14-th “ IEEE International Conference on Peer-to-Peer Computing”, 978-1-4799-6201-3/14/$31.00, 2014 .
14. “Rodrigo Rodrigues” and “Barbara Liskov”, “High Availability in DHTs: Erasure Coding vs. Replication”, 2011 IEEE .
15. “Hakim Weatherspoon” and “John D. Kubiatowicz”, “Erasure Coding vs. Replication: A Quantitative Comparison” Computer Science Division University of California, Berkeley, In Proc. IPTPS ’02.

Index Terms

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Keywords

Erasure coding, Cloud storage, Regenerating codes, Locally repairable codes.