Auditing Big Data Storage in Cloud Computing Using Divide and Conquer Tables

Abstract—Cloud computing has arisen as the mainstream platform of utility computing paradigm that offers reliable and robust infrastructure for storing data remotely, and provides on demand applications and services. Currently, establishments that produce huge volume of sensitive data, leverage data outsourcing to reduce the burden of local data storage and maintenance. The outsourced data, however, in the cloud are not always trustworthy because of the inadequacy of physical control over the data for data owners. To better streamline this issue, scientists have now focused on relieving the security threats by designing remote data checking (RDC) techniques. However, the majority of these techniques are inapplicable to big data storage due to incurring huge computation cost on the user and cloud sides. Such schemes in existence suffer from data dynamicity problem from two sides. First, they are only applicable for static archive data and are not subject to audit the dynamic outsourced data. Second, although, some of the existence methods are able to support dynamic data update, increasing the number of update operations impose high computation and communication cost on the auditor due to maintenance of data structure, i.e., merkle hash tree. This paper presents an efficient RDC method on the basis of algebraic properties of the outsourced files in cloud computing, which inflicts the least computation and communication cost. The main contribution of this paper is to present a new data structure, called Divide and Conquer Table (D&CT), which proficiently supports dynamic data for normal file sizes. Moreover, this data structure empowers our method to be applicable for large-scale data storage with minimum computation cost. The one-way analysis of variance shows that there are significant differences between the proposed method and the existing methods in terms of the computation and communication cost on the auditor and cloud.
CONCLUSIONS

This paper presented an efficient RDC scheme to ensure the data storage security in cloud computing. To achieve this goal, we employed algebraic signature properties that empower our method to validate the integrity of the outsourced data and reduce the computation cost on the auditor and cloud sides. By designing the D&CT as a new data structure, our RDC method has capability to support dynamic block update operations. The D&CT also allows the verifier to audit the large-scale files and perform a large number of update operations with least computation cost on the verifier and server. The security and performance analysis showed the efficiency and provably of our scheme.

SYSTEM REQUIREMENTS:

HARDWARE REQUIREMENTS:

- System : Pentium IV 2.4 GHz.
- Hard Disk : 40 GB.
- Floppy Drive : 1.44 Mb.
- Monitor : 15 VGA Colour.
- Mouse : Logitech.
- Ram : 512 Mb

SOFTWARE REQUIREMENTS:

- Operating system : Windows 7/UBUNTU.
- Coding Language : Java 1.7 , Hadoop 0.8.1
- IDE : Eclipse
- Database : MYSQL
REFERENCES
