SECURE DATA DEDUPLICATION WITH DYNAMIC OWNERSHIP MANAGEMENT IN CLOUD STORAGE

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ABSTRACT

In cloud storage services, deduplication technology was introduced to reduce the space and bandwidth requirements of services by eliminating redundant data and storing only a single copy of them. Deduplication is most effective when multiple users upload the same data to the cloud storage, but it raises issues relating to security and ownership. Proof of- ownership schemes allow any owner of the same data to prove to the cloud storage server that he owns the data in a different way. Recently, several deduplication schemes are proposed to solve this problem by allowing each owner to share the same encryption key for the same data. However, most of the schemes suffer from security issues, since they do not consider the dynamic changes in the ownership of the data that occur frequently in a practical cloud storage service. In this paper, we propose a server-side deduplication scheme for encrypted data. It allows the cloud server to control access to outsourced data even when the ownership changes dynamically by providing convergent encryption and secure ownership group key distribution. This prevents data leakage not only to revoked users even though they previously owned that data, but also to any honest curious cloud storage server. In addition, the proposed scheme guarantees data integrity against any tag inconsistency attack. Thus, security is enhanced in the proposed scheme. The efficiency analysis results demonstrate that the proposed scheme is almost as efficient as the previous schemes, while the additional computational overhead is negligible.

I.INTRODUCTION

Cloud computing provides seemingly unlimited “virtualized” resources to users as services across the whole Internet, while hiding platform and implementation details. Today’s cloud service providers offer both highly available storage and massively parallel computing resources at relatively low costs. As cloud computing becomes prevalent, an increasing amount of data is being stored in the cloud and shared by users with specified privileges, which define the access rights of the stored data. One critical challenge of cloud storage services is the management of the everincreasing volume of data. To make data management scalable in cloud computing, deduplication has been a wellknown technique and has attracted more and more attention recently. Data deduplication is a specialized data compression technique for eliminating duplicate copies of repeating data in storage.the deduplication a hashing function can be used to return a unique key for a particular data [1].The technique is used to improve storage utilization and can also be applied to network data transfers to reduce the number of bytes that must be sent. Instead of keeping multiple data copies with the same content, deduplication eliminates redundant data by keeping only. One physical copy and referring other redundant data to that copy. Deduplication can take place at either the file level or the block level. For file-level deduplication, it eliminates duplicate copies of the same file.

Deduplication can also take place at the block level, which eliminates duplicate blocks of data that occur in nonidentical files [1]. Providers of cloud-based storage such as Google drive can save on storage costs via deduplication: should two clients upload the same file, the service detects this and stores only a single copy [2]. Convergent encryption [2][9] has been proposed to enforce data confidentiality while making deduplication feasible. It encrypts/decrypts a data copy with a convergent key, which is obtained by computing the cryptographic hash value of the content of the data copy. After key generation and data encryption, users retain the keys and send the cipher text to the cloud.

II.RELATED WORK

Bellare et al. [3] showed Data confidentiality by transforming the predictable message into unpredictable message. Introduces a key server as third party to generate the file tag for duplicate check. Bugiel et al. [6] provided an architecture consisting of twin clouds for secure outsourcing of data and arbitrary computations to an untrusted commodity cloud. Xu et al. [9] also addressed the problem and showed a secure convergent encryption for efficient encryption, without considering issues of the key-management and block-level deduplication. Anderson,Le Zhang. [1] proposed backup solutions for fast and secure backups,used an encrypted deduplication algorithm. This algorithm supports client-end per-user encryption which is necessary for confidential personal data. It also supports a unique feature which allows immediate detection of common sub trees, avoiding the need to query the backup system for every file.

III.EXISTING SYSTEM

In the existing reduplication system, each user is issued a set of privileges during system initialization. Each file uploaded to the cloud is also bounded by a set of privileges to specify which kind of users is allowed to perform the duplicate check and access the files. Before submitting his duplicate check request for a file, the user needs to take this file and his own privileges as inputs. The user is able to find a duplicate for this if and only if there is a copy of this file and a matched privilege stored in cloud.

IV.EXISTING TECHNIQUE

Symmetric encryption technique.

V.TECHNIQUE DEFINITION

Symmetric encryption uses a common secret key to encrypt and decrypt information. Each file uploaded to the cloud is also bounded by a set of privileges to specify which kind of users is allowed to perform the duplicate check and access the files.

DRAWBACKS:

The user needs to know private key.

- Less protect security.
- These deduplication systems cannot support differential authorization duplication check

VI.PROPOSED SYSTEM

In the proposing system, we .eliminating duplicate copies of repeating data and has been widely used in cloud storage to reduce the amount of storage space and save bandwidth. To protect the privacy of sensitive data while supporting deduplication, the convergent encryption technique has been proposed to encrypt the data before outsourcing .To better protect data security, this paper makes the first attempt to formally address the problem of authorized data deduplication.

PROPOSED TECHNIQUE

Convergent encryption technique

TECHNIQUE DEFINITION

A user derives a convergent key from each original data copy and encrypts the data copy with the convergent• key.

ADVANTAGES

The user don't needs to know private key

- Better protect security.
- These deduplication systems can support differential authorization duplication check

VII.SYSTEM ARCHITECTURE

Whenever someone wants to give information or take information from cloud they have to take permission i.e. authentication is done. If not a member they have to register first. Then the user will request private cloud to get a file token .Private cloud will issue file token and Convergent key generation takes place. With that key user will upload a file to the public cloud, then there will be a deduplication system to check whether the file already exist or not. If the file already exists then the file will not upload in public cloud.

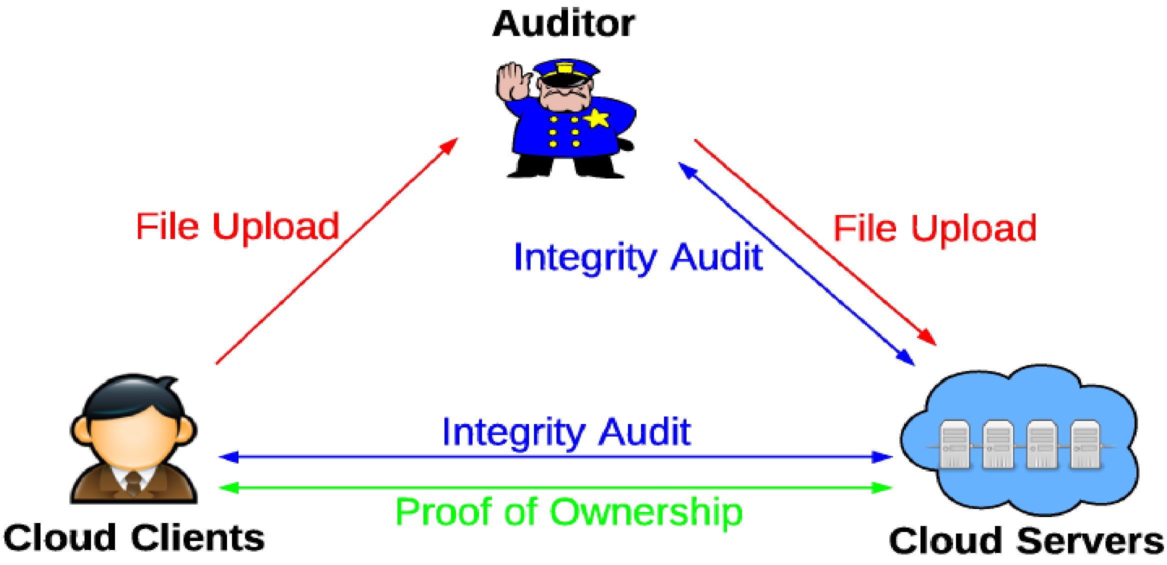
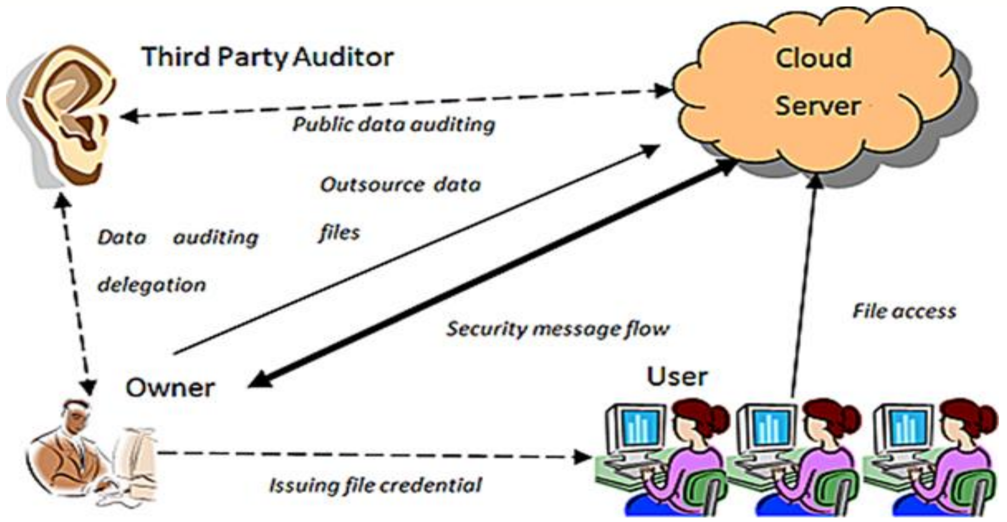


Fig1: System architecture

VIII.AUTHENTICATION

The process of identifying an individual usually based on a username and password. In security systems, Authentication merely ensures that the individual is who he or she claims to be, but says nothing about the access rights of the individual. In authentication module is used to security purpose. Here this module only for user, after registration user enter the username and password. This input is check into the database, whether input is correct or not. If input is correct then allow to next process otherwise consider as a non authenticated user

Secure data de-duplication technology is used to reduce the space and bandwidth requirements by storing only single copy of data. User upload his file by dividing the file into chunks and by creating the hash code for each chunk. Private server maintains the log. Private servers database stores the data related to file that is file id, chunk id, hash. Cloud server stores deduplicated data.



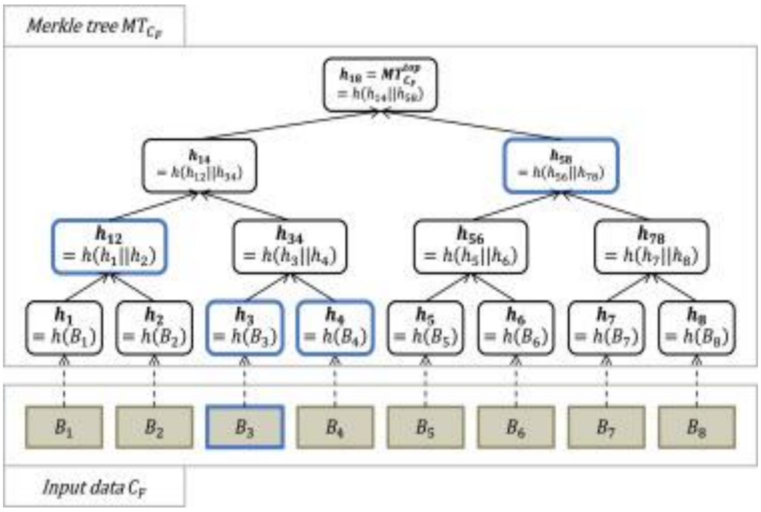
IX.AUTHORIZED DUPLICATE CHECK SCHEME (ADS)

The public cloud performs duplicate check directly and tells the user if there is any duplicate. Public Cloud can store and retrieve file. De-duplication has a removing duplicate file. Its will find out duplicate file.

e) Authorized Duplicate Check Scheme

X.ALGORITHM USED CONVERGENT ENCRYPTION TECHNIQUE

A user derives a convergent key from each original data copy and encrypts the data copy with the convergent key. The key generation algorithm that maps a data copy to a convergent key. The symmetric encryption algorithm that takes both the convergent key and the data copy as inputs and then outputs a cipher text. The decryption algorithm that takes both the cipher text and the convergent key as inputs and then outputs the original data copy and the tag generation algorithm that maps the original data copy and outputs a tag.



XI.APPLICATIONS

CtrlS Real Cloud: The CtrlS Real Cloud has a multi-layered management model. The cloud controller server enables everything, from system architecture to VM root access, to be managed via the user interface and API. Real Cloud enables you to put up applications and manage them, all remotely and with utmost ease. Cloud Layer Services: Discover the promise of cloud, not the compromises. Cloud Layer includes virtual servers, remote storage and a robust content delivery network that leverage our core advantages and longtime leadership in automated, on-demand, self-managed infrastructure. This system will help to reduce storage space which is used by saving multiple copies of same file. Dynamic ownership management is an important and challenging issue in secure de-duplication over encrypted data in cloud storage. A novel secure data de-duplication scheme enhances a fine-grained ownership management by exploiting the characteristic of the cloud data management system. Thus, the proposed scheme enhances data privacy and confidentiality in cloud storage against any users who do not have valid ownership of the data.

XII.CONCLUSION

In this paper, the notion of authorized data deduplication was proposed to protect the data security by including differential privileges of users in the duplicate check. In which the duplicate-check tokens of files are generated by the private cloud server with private keys.

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