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Secure Authorized Deduplication using a Hybrid Cloud Approach

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Abstract

Data deduplication is one of important data compression techniques for 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 confidentiality 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. Different from traditional deduplication systems, the differential privileges of users are further considered in duplicate check besides the data itself. We also present several new deduplication constructions supporting authorized duplicate check in hybrid cloud architecture. Security analysis demonstrates that our scheme is secure in terms of the definitions specified in the proposed security model. As a proof of concept, we implement a prototype of our proposed authorized duplicate check scheme and conduct test bed experiments using our prototype. We show that our proposed authorized duplicate check scheme incurs minimal overhead compared to normal operations.

Existing System

- ➢ Data deduplication systems, the private cloud is involved as a proxy to allow data owner/users to securely perform duplicate check with differential privileges.

- ➢ Such architecture is practical and has attracted much attention from researchers.

- ➢ The data owners only outsource their data storage by utilizing public cloud while the data operation is managed in private cloud.

Disadvantages of Existing System

- ➢ Traditional encryption, while providing data confidentiality, is incompatible with data deduplication.

- ➢ Identical data copies of different users will lead to different cipher texts, making deduplication impossible.

Proposed System

In this paper, we enhance our system in security. Specifically, we present an advanced scheme to support stronger security by encrypting the file with differential privilege keys. In this way, the users without corresponding privileges cannot perform the duplicate check. Furthermore, such unauthorized users cannot decrypt the cipher text even collude with the S -CSP. Security analysis demonstrates that our system is secure in terms of the definitions specified in the proposed security model.

Advantages of Proposed System

- The user is only allowed to perform the duplicate check for files marked with the corresponding privileges.

- We present an advanced scheme to support stronger security by encrypting the file with differential privilege keys.

- Reduce the storage size of the tags for integrity check. To enhance the security of deduplication and protect the data confidentiality,

System Architecture:
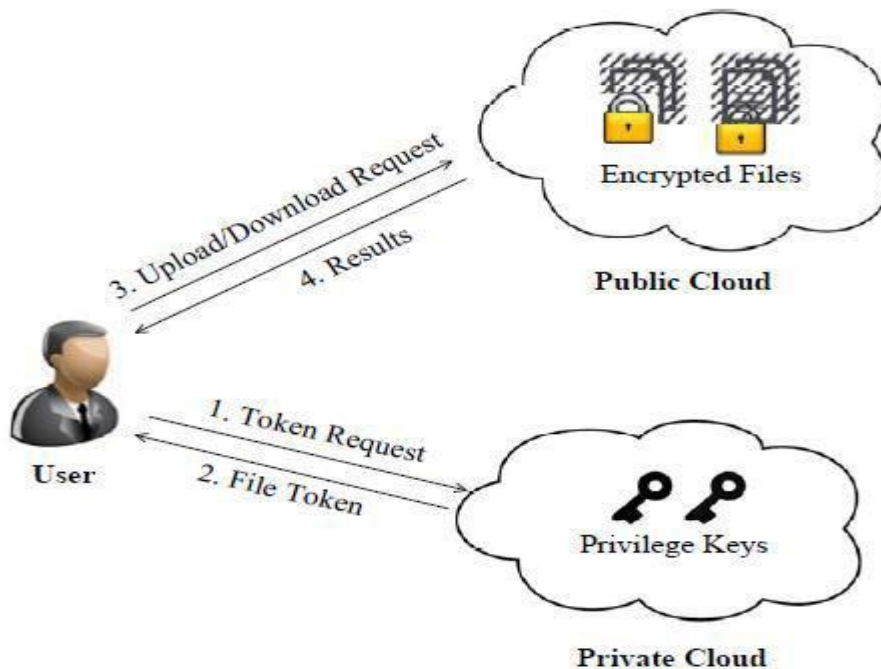
System Requirements:

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 XP/7.
- ➤ Coding Language : JAVA/J2EE
- ➤ IDE : Netbeans 7.4
- ➤ Database : MYSQL

Reference:

Jin Li, Yan Kit Li, Xiaofeng Chen, Patrick P. C. Lee, Wenjing Lou, "A Hybrid Cloud Approach for Secure Authorized Deduplication**", IEEE Transactions on Parallel and Distributed Systems, 2014.**

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