REMOVING OF MULTIPLE VOTES BY USING DE-DUPLICATION ANALYSIS

ABSTRACT

Data de duplication 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 de duplication, the convergent encryption technique has been proposed to encrypt the data before outsourcing. To better protect data security, this project makes the first attempt to formally address the problem of authorized data de duplication. Different from traditional de duplication systems, the differential privileges of users are further considered induplicate check besides the data itself. We also present several new de duplication 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, the proposed work implements a prototype of our proposed authorized duplicate check scheme and conduct test bed experiments using our prototype. The proposed work shows that our proposed authorized duplicate check scheme incurs minimal overhead compared to normal operations.

SCOPE OF THE PROJECT

Data de duplication techniques are widely employed to backup data and minimize network and storage overhead by detecting and eliminating and redundancy among data.

OBJECTIVE

The main goal is to enable de duplication and distributed storage of the data across multiple storage servers.

PROBLEM DEFINITION

The existing system only performs the de duplication either on block level or file level. It does not provide very high security needed for the message to be transmitted. Due to this the third party or hacker may find the data that is being transmitted between the users.

EXISTING SYSTEM

Data de duplication systems, the private cloud are 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.

Data de duplication is a specialized data compression technique for eliminating duplicate copies of repeating data in storage. 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, de duplication eliminates redundant data by keeping only one physical copy and referring other redundant data to that copy.

De duplication can take place at either the file level or the block level. For file level de duplication, it eliminates duplicate copies of the same file. De duplication can also take place at the block level, which eliminates duplicate blocks of data that occur in non-identical files. Identical data copies of different users will lead to different cipher texts, making de duplication impossible.

Disadvantages

- Traditional encryption, while providing data confidentiality, is incompatible with data de duplication.
- Identical data copies of different users will lead to different cipher texts, making de duplication impossible.

PROPOSED SYSTEM

In this proposed work, the system enhanced with security. Specifically, it 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.

Convergent encryption has been proposed to enforce data confidentiality while making de duplication 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. Since the encryption operation is deterministic and is derived from the data content, identical data copies will generate the same convergent key and hence the same cipher text. To prevent unauthorized access, a secure proof of ownership protocol is also needed to provide the proof that the user indeed owns the same file when a duplicate is found.

Advantages

- 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 de duplication and protect the data confidentiality.

METHODS AND ALGORTIHMS USED

HARDWARE REQUIREMENT

The hardware requirements may serve as the basis for a contract for the implementation of the system and should therefore be a complete and consistent specification of the whole system. They are used by software engineers as the starting point for the system design. It shows what the system does and it also shows how it should be implemented. It specifies the speed of the system that should be used in this project. The hardware requirement for this project is mentioned below.

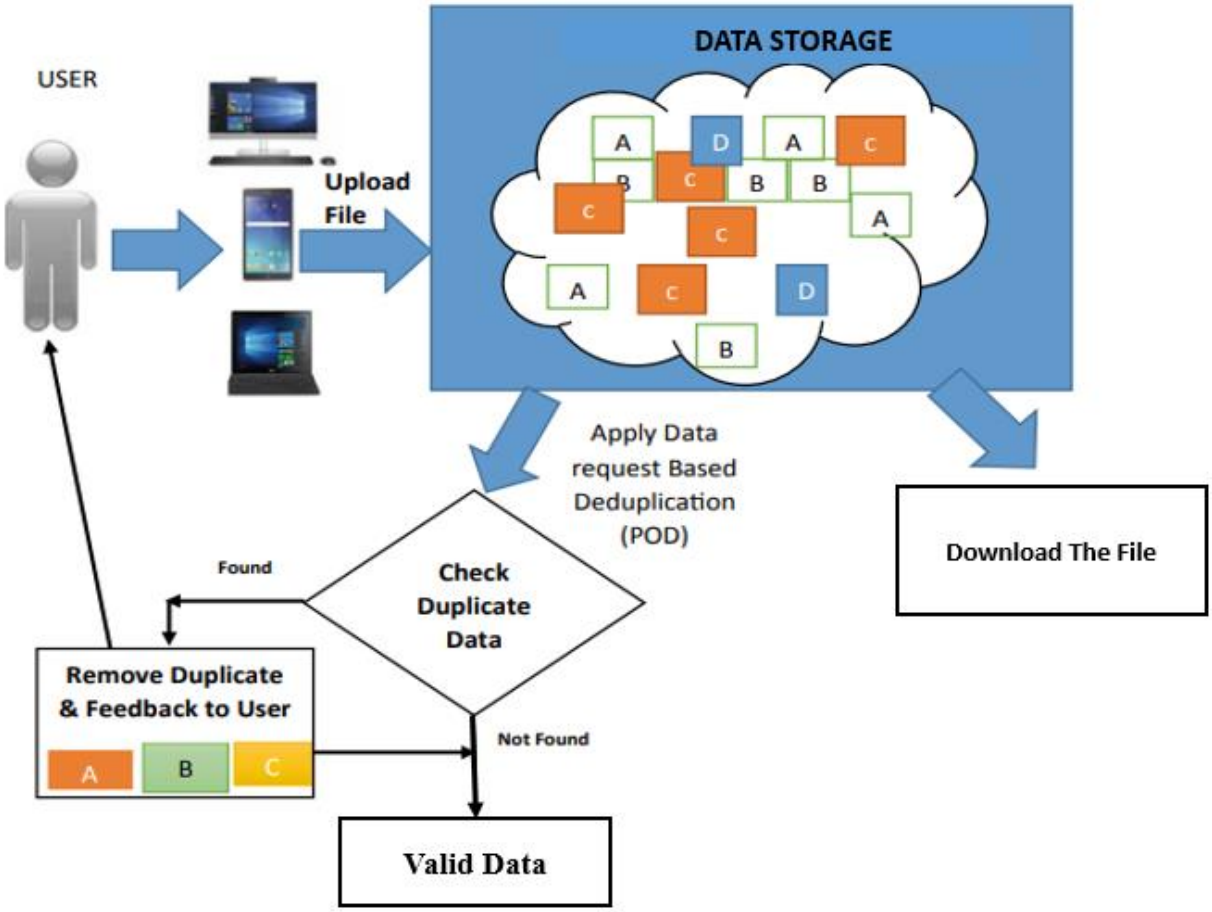
System	: Pentium IV 2.4 GHz
Hard Disk	: 40 GB
Floppy Drive	: 44 Mb
Monitor	: 15 VGA Colour
Ram	: 512 Mb

SOFTWARE REQUIREMENT

The software requirements document is the specification of the system. It should include both a definition and a specification of requirements. It is a set of what the system should do rather than how it should do it. The software requirements provide a basis for creating the software requirements specification. It is useful in estimating cost, planning team activities, performing tasks and tracking the team and tracking the team's progress throughout the development activity. The software requirement specifies the application software that is being used in the project. The software needed to develop this project is mentioned below.

Operating system	: Windows XP/7
IDE	: Eclipse
Coding Language	: Java

SYSTEM ARCHITECTURE



PROPOSED ALGORITHM

ENCRYPTION

M3 encryption:

- The algorithm itself is very complex and secure, but using it is as simple.
- The basic principle of this algorithm is character-remapping based on key self-mutation.
- The lifespan of a key is equal to the length of the key. This means that any state of the key will only be responsible for encrypting a part of the clear-text that is equal in length to the length of that version of the key before the key is self-mutated into a new version. This new version will then encrypt the next part of the clear-text, etc.
- In the overall process, you have a clear-key entered by the user which is diverted into 4 separate "threads" of different and constantly self-mutating keys. These 4 different keys are responsible for

simultaneously converting the clear-text letters one letter at a time into cipher text by 2 different methods, these methods being: array remapping, and a sort of dynamic "substitution cipher". This whole process is repeated over and over again, re-encrypting everything a number of times before the cipher-text is finalized.

- An attempt of reversing the process by a potential attacker would require figuring out the end state of 4 different keys simultaneously going backwards one mutation-version at a time. As 2 of these keys are used for array remapping, it is necessary to get the whole of these keys per letter decoded in the clear-text.

DECRYPTION ALGORITHM

Data Encryption Standard (DES)

This stands for Data Encryption Standard and it was developed in 1977. It was the first encryption standard to be recommended by NIST (National Institute of Standards and Technology). DES is 64 bits key size with 64 bits block size. Since that time, many attacks and methods have witnessed weaknesses of DES, which made it an insecure block cipher.

Algorithm:

function DES_Encrypt (M, K)

where M = (L, R)

M←IP (M)

For round←1 to 16 do

K←SK (K, round)

L←L xor F(R,Ki)

swap(L, R)

end

swap (L, R)

M←IP-1 (M)

return M

End

chunking technique for deduplication

Chunking is a process to split a file into smaller files called chunks. In some applications, such as remote data compression, data synchronization, and data de duplication, chunking is important because it determines the duplicate detection performance of the system. Content-defined chunking (CDC) is a method to split files into variable length chunks, where the cut points are defined by some internal features of the files. Unlike fixed-length chunks, variable-length chunks are more resistant to byte shifting. Thus, it increases the probability of finding duplicate chunks within a file and between files. However, CDC algorithms require additional computation to find the cut points which might be computationally expensive for some applications. In our previous work (Widodo et al., 2016), the hash-based CDC algorithm used in the system took more process time than other processes in the de duplication system. This proposed work shows high throughput hash-less chunking . Instead of using hashes, RAM uses bytes value to declare the cut points. The algorithm utilizes a fix-sized window and a variable-sized window to find a maximum-valued byte which is the cut point. The maximum-valued byte is included in the chunk and located at the boundary of the chunk. This configuration allows RAM to do fewer comparisons while retaining the CDC property. We compared RAM with existing hash-based and hash-less deduplication systems. The experimental results show that our proposed algorithm has higher throughput and bytes saved per second compared to other chunking algorithms.

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