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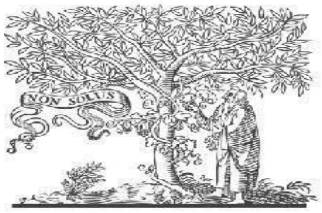

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# EFFICIENT THE CLOUD DATA OVER THE CENTRAL REVELATION

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**ABSTRACT:**

We study the confidentiality of the data against an opponent who knows the cryptographic key and has access to a large part of the encrypted text blocks. To this end, we suggest Bastion, a new and efficient system that guarantees the confidentiality of the data, even if the encryption key is filtered and the opponent has access to almost all blocks of encrypted text. We analyze the safety of Bastion and evaluate its performance by applying the prototype. We also discuss practical ideas about the integration of Bastion in commercial distributed storage systems. The results of our evaluation indicate that Bastion is very suitable for integration into existing systems, since it incurs less than 5% of the loading costs compared to the semantically existing secure coding modes.

***Keywords: Key exposure, data confidentiality, dispersed storage.***

## 1. INTRODUCTION:

Cloud storage is gaining popularity recently. In business configuration, we see an increase in the demand for data outsourcing, which helps in the strategic management of company data. It is also used as the main technology behind many online services for personal applications. Today, it is easy to request free email accounts, photo albums, file sharing and / or remote access, with a storage size of more than 25 GB (or just a few dollars for more than 1 TB). In addition to current wireless technology, users can

access almost all of their files and emails through a mobile phone anywhere in the world. Regarding data privacy, a traditional way of ensuring that it relies on the server to apply access control after authentication (for example, [1]), which means that any unexpected escalation of privileges will show all the data. In a shared rented cloud computing environment, things get worse. Data from different clients can be hosted on separate virtual machines (VMs) but on a physical machine. The data in one of the VM targets can be stolen by creating an instance of another VM subscriber with the goal [2]. With regard to the availability of files, there are a number of encryption schemes that allow an external auditor to ensure that the files are available on behalf of the owner of the data without leaking anything over the data [3], or without compromising the data that have the IDs [4]. Similarly, cloud users may not firmly believe that the cloud server is doing a good job of confidentiality. The encryption solution, for example, [5], with installed security based on number theory assumptions, is more desirable, provided that a user is completely unhappy with the confidence in the VM's security or the security of the technical staff. These users are encouraged to encrypt their data with their own keys before uploading them to the server. Data exchange is an important function in cloud storage. For example, bloggers can allow their friends to see a subset of their private photos; The organization can give its employees access to part of the confidential data. The difficult problem is how to share encrypted data effectively. Of course, users can download encrypted data from storage, decrypt it and then send it to others to share, but they lose the value of cloud storage. Users must be able to delegate the rights to access data sharing to others so they can access this data directly from the server. However, finding an effective and safe way to share partial data in cloud storage is not easy. Next, we will take Dropbox1 as an example as an illustration. Suppose Alice puts all her photos in drivehq and doesn't want to show them to everyone. Due to the possibility of a different data leak, Alice is not satisfied with just relying on the privacy protection mechanisms provided by drivehq, so she encrypts all images with her own keys before downloading them. One day, Alice's friend, Bob, asked him to share the photos

taken during all the years Bob appeared. Alice can use the share function from drivehq, but now the problem is how to delegate the decryption rights of these images to Bob. One possible option that Alice could choose is to send Bob safely to the respective secret keys. Of course, there are two extreme ways to do it under the traditional coding model: Alice encrypts all files with an encryption key and gives Bob the corresponding secret key directly. . Alice encrypts the files with premium keys and Bob sends the corresponding secret keys. Obviously, the first method is not enough because all unselected data could also be filtered to Bob. For the second method, there are practical concerns about efficiency. The number of these keys reaches the number of photos shared, for example, one thousand. The transmission of these secret keys requires an inherently secure channel, and the storage of these keys requires somewhat expensive secure storage. The costs and associated complexities generally increase with the amount of decryption keys that will be shared. In short, it is heavy and very expensive to do. Encryption keys also come with two identical flavor keys or an asymmetric (public) key. With symmetric encryption, when Alice wants to create data from a third party, she has to provide the encryption key or her secret key; Obviously, this is not always desirable. On the contrary, the encryption key and the c

## TERMINOLOGY AND PROBLEM STATEMENT

We study the confidentiality of the data against an opponent who knows the cryptographic key and has access to a large part of the encrypted text blocks. The opponent can obtain the key by exploiting defects or funds in the key generation program or by penetrating the devices that store the keys (for example, in the user or in the cloud). As far as we know, this discount overrides the security of encryption solutions, including solutions that protect encryption keys through secret exchange (these keys can be filtered once they are created).

A strong attacker breaks the confidentiality of the data by obtaining encryption keys, coercion or background in the encryption software

One or all conversions (AONT) is an efficiently calculated conversion that assigns the sequence of the input block to the sequence of the output block with the

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following characteristics: (1) Due to all the output blocks, the conversion can be converted from Efficiently and (2) provides all but one of the output blocks, It is not possible to count any of the original input blocks. The official AONT syntax is given by a pair of p.p.t. Algorithms Q = (E, D) where:

The encryption algorithm is a probabilistic algorithm that takes as input of message x ∈ {0, 1} ∗ and produces a pseudo-encoded text and.

The decryption algorithm is an inevitable algorithm that takes false text entries as y, and issues a message x ∈ {0, 1} ∗ or ⊥ to indicate that the false text of the entry is invalid

To ensure that it is correct, we require that for all x ∈ {0, 1} ∗ , and for all y ← E (x), we have x ← D (y). The literature includes several safety definitions for AONT. In this document, we rely on the definition used by the experiment described below. This definition specifies the length of block l for the encrypted text and can be written as y = y [1]. . . and [n], where | and [i] | = lyn ≥ 1.

## IMPLEMENTING DYNAMIC FACETED SEARCH

We suggest Bastion, an effective scheme that guarantees the confidentiality of data against an opponent who knows the cryptographic key and has access to a large part of the encrypted text blocks. We analyze the security of Bastion and show that it prevents the filtering of any block of text as long as the opponent has access to the encryption key and all but two of the blocks of encrypted text. We evaluate the performance of scientific Bastion and practically against a series of existing coding techniques. Our results show that Bastion significantly improves (more than 50%) the performance of existing AON coding systems, and has an insignificant amount compared to secure semantic semantic coding modes (for example, CTR coding mode). We discuss practical ideas about the implementation of Bastion within existing storage systems, such as the HYDRAstor network storage system

We introduced a new definition of security that captures the confidentiality of data against the new opponent.

## BASTION: PROTOCOL SPECIFICATION

Now we are details of the bastion specification. When entering the security

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parameter k, the Bastion key creation algorithm generates the key ∈ {0,1} k for the base block code. The bastion elevates the encryption cipher block in CTR mode, which, when entering an uncoded bit stream x, divides it into blocks x [1]. . . , X [m], where m is odd2, so that each block has a volume of l. 3 The group of input blocks is encoded under the K key, which encodes the text and ′ = y ′ [1],. . . , Y '[m + 1], where y' [m + 1] is a randomly chosen configuration vector of {0, 1} l. Then, Bastion applies a linear transformation to y 'as follows. Leave n = m + 1 and assume that A is the nby-n matrix where the element ai, j = 0l if you = j or ai, j = 1l, otherwise. 4 Strength calculates y = y ′ • A, where the sums and multiplications are performed by XOR and AND operations, respectively. That is, y [i] ∈ and is calculated as y [i] = Lj = n j = 1 (y ′ [j] ∧aj, i), because I = 1 ... N. When observing the K key, inverting the bastion requires calculating y '= y • A - 1 and decoding y' using K. Note that matrix A is reversible and A = A - 1. The pseudocode for the algorithms of Encoding and decoding is shown in Bastion, respectively. Both F algorithms are used to denote generic block encryption (for example, AES). In our application, we calculate the linear transformation efficiently using the XOR 2n operations as follows: t = y ′ [1] ⊕ and ′ [2] • • • y ′ [n], and [i] = t ⊕ and ′ [i], 1 i n. Note that y ′ [1]. . . and '[n] (calculated on line 6 in algorithm 1) is the output of the CTR encoding mode, where y' [n] is the initialization vector. Similar to CTR mode, Bastion's final output is a block larger than the original input.

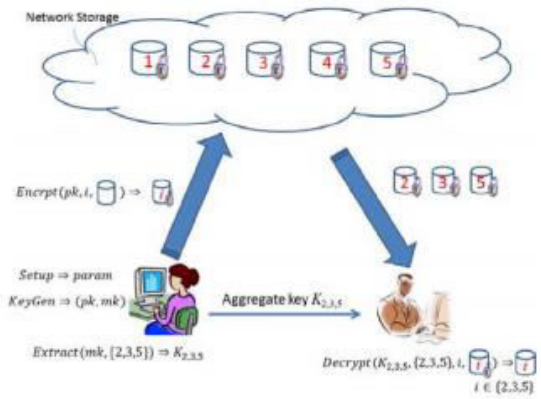


**Fig no 1: system architecture**

We assume a specific mathematical discount A that can obtain long-term encryption keys used to encrypt data. The opponent can do this (1) taking advantage of defects or background in the key generation program or (2) compromising the device that stores the keys (in the cloud or in the user). Since encrypted text blocks are distributed among servers hosted in different domains, we

assume that the opponent cannot penetrate all storage servers. In particular, we assume that a discount can affect all servers except one and we design this discount giving you access to all blocks of encrypted text. Note that if the opponent also learns the user's credentials to log in to the storage servers and download all the encryption scripts, no encryption mechanism can maintain the confidentiality of the data. We emphasize that leveling the encryption key does not necessarily mean compromising user credentials. For example, encryption can occur on a specific device and the key can be filtered, for example, by the manufacturer; In this scenario, it is clear that the user credentials to access the cloud servers are not compromised.

## CONCLUSION

Then we suggest Bastion, a scheme that guarantees encryption of encrypted data even when the opponent has an encryption key and all but two blocks of coded text. Bastion is more suitable for configuration, since encrypted text blocks are stored in multi-cloud storage systems. In this configuration, the opponent must obtain the encryption key and assign all servers to retrieve any block of plain text. We analyze the security of Bastion and evaluate its performance in realistic environments. Bastion (with more than 50%) improves the current primitive performance that provides similar security under key exposure, and only has a minimum amount (less than 5%) compared to semantic secure coding modes (for example, the mode of CTR coding). Finally, we demonstrate how Bastion can be practically integrated into existing distributed storage systems.

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