International Journal of Engineering Technology Science and Research
IJETSR
www.ijetsr.com
ISSN 2394 – 3386
Volume 4, Issue 7
July 2017

Aggregate Key Sharing Mechanism for Sharing Data in Group via Cloud Storage

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Abstract-*In cloud storage data sharing is an important utility. Most of the users attracted by cloud storage because of its numerous benefits. The idea of Key Aggregate Searchable Encryption is build through a concrete KASE scheme. In this scheme data owner distribute single trapdoor to the cloud. In this paper , we used multi cloud for storing & accessing the large amount of data because in cloud environment, large amount of data produced everyday. So, demands for resource is increasing but still clients are worrying about their data is correctly stored & maintained by providers without intact. In this scheme , data owner upload file on multi cloud by splitting files into no. of equal size & store it on multi cloud. User using shared key by data owner, submit single trapdoor to cloud for searching the documents or files. Then after completion of search merge this file parts and then user can download this documents. The security examination and execution evaluation both certify that our propose arrangements are provably secure and basically beneficial. Hence this paper, we are use multi cloud to reduce storage overhead of the customer by compressing the data and reduce computational overhead of the cloud storage server.*

Keywords- Searchable encryption, data sharing, cloud storage, data privacy.

I. INTRODUCTION

Distributed storage is an answer for sharing and getting to substantial measure of information. Today, various clients are sharing different sorts of reports, for example, photographs, recordings and archives by means of different long range informal communication construct applications in light of regular routine. Business clients are additionally being pulled in towards utilizing the distributed storage because of its focal points. Be that as it may, while sharing information through distributed storage, clients need to at the same time mindful about the information spillages in the cloud. Commonly business associations need to share the secret information inside the association or to alternate associations. Consider a situation where an administrator needs to impart various classified documents to one of the representative then director will transfer assume n number of records on distributed storage and will give n number of encryption keys to the worker. The representative will store all the keys safely. At that point utilizing these keys, the worker will create the watchword trapdoor for getting to the records. So for n number of documents, it is not productive to give n number of keys, store them safely and afterward create trapdoors for each record. It turns out to be extremely costly at the worker's side server. This pragmatic issue propels to build a plan which will give a solitary accumulated key to the worker and will enable access to the cloud by creating single trapdoor by the representative to get to any number of files.In this paper, we propose the novel idea of key-total searchable encryption (KASE), and instantiating the idea through a solid KASE strategy. The propose KASE conspire identifies with any of the distributed storage that backings the searchable collecting information sharing component, which implies any client may like to appropriate a gathering of documents which are particular with a gathering of chose clients, while allowing the last to do catchphrase seek over the prior. To keep up searchable gathering information sharing the principle requirements for productive key administration are twofold. Essentially, an information proprietor needs to apportion a solitary whole key (rather than a gathering of keys) to the

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ISSN 2394 – 3386
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client to sharing different records. Resulting, the user needs to present a solitary total trapdoor to the cloud for performing watchword look over any amount of shared documents. KASE plan can guarantee both solicitations and security scenarios.

II. REVIEW OF LITERATURE

S. Yu, C. Wang, K. Ren, and W. Lou,proposeddispersed figuring is a creating handling perspective in which resources of the enrolling system are given as organizations over the Internet. As promising as it is by all accounts, this perspective moreover conveys various new challenges for data security and gets the opportunity to control when customers outsource sensitive data for sharing on cloud servers, which are not inside an unclear placed stock in space from data proprietors. To keep fragile customer data private against untrusted servers, existing courses of action generally apply cryptographic methods by revealing data unscrambling keys just to affirmed customers. Regardless, in doing accordingly, these courses of action unavoidably exhibit a mind-boggling figuring overhead on the data proprietor for key flow and data organization when fine grained data get the opportunity to control is needed, and in this way don't scale well. The issue of in the meantime finishing fine-grainedness, versatility, and data mystery of get the chance to control as a general rule still remains unverifiable. This paper addresses this testing open issue by, on one hand, describing and maintaining access game plans in light of data qualities, and, of course, empowering the data proprietor to assign most by far of the computation errands required in fine grained data get the chance to control to untrusted cloud servers without uncovering the key data substance. we achieve this target by mishandling and uncommonly combining strategies of trademark based encryption (ABE), middle person re-encryption, and detached re-encryption. Our propose scheme similarly has eminent properties of customer get the opportunity to profit characterization and customer riddle key obligation. Wide examination exhibits that our propose plan is significantly capable and provably secure under existing security models[1].

X. Liu, Y. Zhang, B. Wang, and J. Yan proposedwith the characters of low support and little organization cost, circulated processing offers an intense and calm approach for data sharing in the cloud among social affair people. Regardless, since the cloud is scheming, the security guarantees for the sharing data transform into our stresses. Unfortunately, in light of the progressive change of the enlistment, sharing data while giving security sparing is up 'til now a testing issue. Starting late, Liu et al showed a secured multi-proprietor data sharing arrangement, named Mona, which was ensured that any social affair part could subtly give data to others by abusing bundle signature strategy. Meanwhile, the arrangement could deliver fine-grained get the chance to control, which infers that not only the get-together people could use the sharing data resource at whatever point, moreover the new customers could use the sharing data instantly after their revocations and the revoked customers won't be allowed to use the sharing data again after they are removed from the social event. In any case, through our security examination, the Mona plot still has some security vulnerabilities. It will successfully encounter the evil impacts of the course of action strike, which can provoke the denied customers getting the sharing data and divulging other genuine people's insider certainties. Additionally, there is another security insufficiency in the customer selection arrange, which is the way by which to guarantee the private key while circling it in the unsecure correspondence channels. This kind of attack can in like manner incite divulging the customer's secret data [2].

C. Chu, S. Chow,W.Tzeng, et al. proposeddata sharing is an essential value in dispersed stockpiling. In this article, we exhibit to securely, viably, and adaptably bestow data to others in conveyed stockpiling. We depict new open key cryptosystems which make predictable size ciphertexts with the ultimate objective that gainful task of unscrambling rights for any plan of ciphertexts are possible. The peculiarity is that one can add up to any game plan of riddle keys and make them as littler as a singular key, yet including the vitality of all the keys being gathered. Figuratively speaking, the puzzle key holder can release a steady size aggregate key for versatile choices of ciphertext set in disseminated stockpiling, yet the other mixed records outside the set remain private. This insignificant aggregate key can be favorably sent to others or be secured in a shrewd card with outstandingly compelled secure stockpiling. We give formal security examination of our arrangements in the standard model. We

furthermore portray other utilization of our arrangements. In particular, our arrangements give the principle open key patient-controlled encryption for versatile movement, which was yet to be known [3].

X.F. Chen, J. Li, X.Y. Huang, J.W. Li, Y. Xiang proposed attribute based check (ABS) enables customers to sign messages over qualities without revealing any information other than the way that they have affirmed the messages. Regardless, considerable computational cost is required in the midst of checking in existing work of ABS, which grows straightforwardly with the traverse of the predicate formula. Accordingly, this displays an enormous test for resource constrained devices, (for instance, PDAs or RFID marks) to perform such considerable computations unreservedly. Going for taking care of the test above, We at first propose and formalize another perspective called Outsourced ABS, i.e., OABS, in which the computational overhead at customer side is amazingly diminished through outsourcing genuine figurings to an untrusted checking cloud authority association (S-CSP). Besides, we apply this novel perspective to existing ABS arrangements to diminish the multifaceted nature. In this manner, we show two concrete OABS arranges: i) in the main OABS plot, the amount of exponentiations incorporating into stamping is diminished from O(d)to O(1) (around three), where d is the upper bound of breaking point regard portrayed in the predicate; ii) our second arrangement depends on Herranz et al's. improvement with unfaltering size imprints. The amount of exponentiations in checking is lessened from O(d2)to O(d) and the correspondence overhead is O(1). Security examination demonstrates that both OABS arrangements are secure similarly as the unforgeability and trademark guarantor insurance definitions decided in the proposed security illustrate. Finally, to mull over high adequacy and flexibility, we discuss expansions of OABS and show to achieve duty too [4].

C. Wang, Q. Wang, K. Ren, and W. Lou proposed appropriated registering is the since a long time back envisioned vision of figuring as an utility, where customers can remotely store their data into the cloud to welcome the on-demand choice applications and organizations from a typical pool of configurable preparing resources. By data outsourcing, customers can be mitigated from the heaviness of close-by data stockpiling and upkeep. Regardless, the way that customers no longer have physical responsibility for possibly sweeping size of outsourced data makes the data uprightness confirmation in Cloud Computing an amazingly troublesome and perhaps extensive task, especially for customers with obliged figuring resources and capacities. Thusly, enabling open auditability for cloud data stockpiling security is of essential criticalness so customers can fall back on an external survey social event to check the uprightness of outsourced data when required. To securely exhibit a capable untouchable evaluator (TPA), the going with two focal necessities must be met: 1) TPA should have the ability to gainfully audit the cloud data stockpiling without asking for the adjacent copy of data, and present no additional on-line weight to the cloud customer; 2) The pariah reviewing system should get no new vulnerabilities towards customer data security. In this paper, we utilize and astoundingly join the all inclusive community key based homomorphic authenticator with sporadic veiling to finish the security sparing open cloud data looking at system, which meets each above need. To support powerful treatment of different assessing endeavors, I moreover examine the arrangement of bilinear aggregate check to open up our rule result into a multi-customer setting, where TPA can play out various investigating assignments in the meantime. Wide security and execution examination shows the proposed arrangements are provably secure and especially viable [5].

III. PROPOSE SYSTEM APPROACH

In this paper, we address this test by proposing the novel idea of key-total searchable encryption (KASE), and instantiating the idea through a solid KASE plot. The propose KASE plot apply to any distributed storage that backings the searchable gathering information sharing helpfulness, which implies any client may specially impart a gathering of chose documents to a gathering of chose clients, while enabling the last to perform catchphrase look over the previous. To bolster searchable collecting information sharing the basicrequirements for proficient key administration are twofold. Initial, an information proprietor just needs to convey a solitary total key (rather than a gathering of keys) to

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www.ijetsr.com
ISSN 2394 – 3386
Volume 4, Issue 7
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a client for sharing any number of documents. Second, the client just needs to present a solitary total trapdoor (rather than a gathering of trapdoors) to the cloud for performing catchphrase look over any number of shared records. To the best of our insight, the KASE plot propose in this paper is the main known plan that can fulfill both prerequisites (the key-total cryptosystem [4], which has motivated our work, can fulfill the principal necessity yet not the second).Contributions. All the more particularly, our principle commitments are as per the following.

1) We propose a general framework of KASEinventseven algorithms for security purpose parameter setup, key generationalgoriyhm, encryption algorithm, key extraction algorithm, trapdoor generation algorithm, trapdoor adjustment scenarios algorithm, and trapdoor testing algorithm. We then describe both functional and security requirements for designing a valid KASE technique.

2) We then instantiate the KASE framework by designing a KASE scheme. After providing detailed constructions for the seven algorithms, we evaluate the efficiency of the schemes, and establish its security in the course of detailed analysis.

3) We discuss different issues in building an actual group data sharing system based on the propose scheme, and evaluate its performance. The evaluation confirms our system can meet the performance requirements of practical applications in this architecture.

IV. SYSTEM ARCHITECTURE

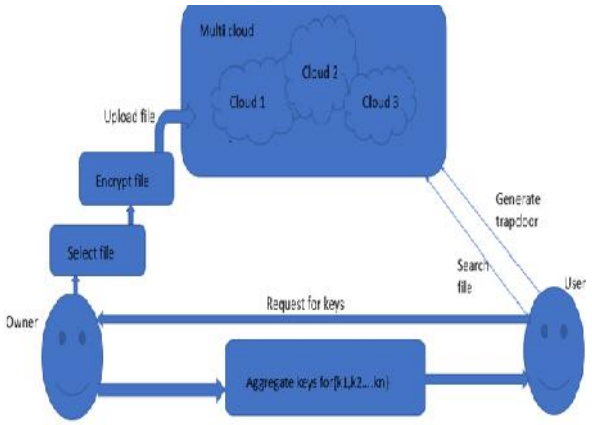

Fig.1. System Architecture

A.Module Description

1) Key Generation

In this module admin going to generate two keys for encryption and decryption process.By using Asymmetric algorithm, admin going to generate master secret key and public key.

2) Access Control

In which admin going to give access control for the files he will going to upload files, while uploading admin going to encrypt the file which he has to upload with the help of master secret key for the security purpose to the cloud.

3) Keyword Indexing

Remove un-necessary words from the file and Find the keywords. Calculate the Content Weight age of keywords Convert the Keywords into hash code by using MD5 algorithm; place the hash code in Index Array.

4) Send Aggregate Key

Based on the categories selected by admin, system has to fetch the corresponding hash keys + fetch the Public Key. Generate the User Aggregate Key and finally send it to users.

5) Search With Keyword

User has to select the aggregate Key then after that Input the search keyword. Convert the keyword into hash code .Decrypt the aggregate Key, Separate and get hash keys and separate and get public Key. Using Hash Key and keyword generate hash codes (Trapdoor). Send the Hash codes to server, based on the Hash codes received server has to check the keyword index and if any matching files are available, list all the file names to the user. (Adjust & Test)View the shortlisted files from server, download the files and finally decrypt the file with owner public key**.**

V. MATHEMATICAL MODEL DESIGN

Generate A Public Key And Private Key

First we need our keys: A private key that the server will keep and a public key that can be given away.

weneed 2 prime numbers:

p & **q**. **p** = 29, **q** = 31

Calculate **n** = **p** * **q** = 29 * 31 = 899

Calculate **t** = (**p** -1) * (**q** – 1) = (29 – 1) * (31 – 1) = 840

Choose a prime number **e**. **e** needs to be relatively

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prime to **t**. (**t** cannot be divisible by **e**) Lets pick 11 we now need to find a **d**. we will use the formula: **d** * **e** [=] 1 mod **t**

This means (**d** * 11) / **t** will give us a remainder of one. You have to find the inverse of **e**mod **t**. Since weare dealing with such small numbers we can sort of guess our **d** until we find one that works. (611 * 11) = 6721, 6721 / 840 = 8 with remainder 1. So 611 works! We now have everything we need for a private and public key to encrypt our data.

p – 29

q – 31

n – 899

t – 840

e – 11

d – 611

Our public key becomes **n** and **e**.

Our private key becomes **n** and **d**.

File Encryption

$$\mathrm{Encrypt}(pk, i)$$

This algorithm is run by the data owner to encrypt the $i^{t|}$ document and generate its keywords' ciphertexts. For each document, this algorithm will create a delta Δi for its searchable encryption keyk_i. On input of the owner's public key pk and the file index i, this algorithm outputs data ciphertext and keyword ciphertextsCi.

Trapdoor Generation

$$\mathrm{Trapdoor}(k_a, w)$$

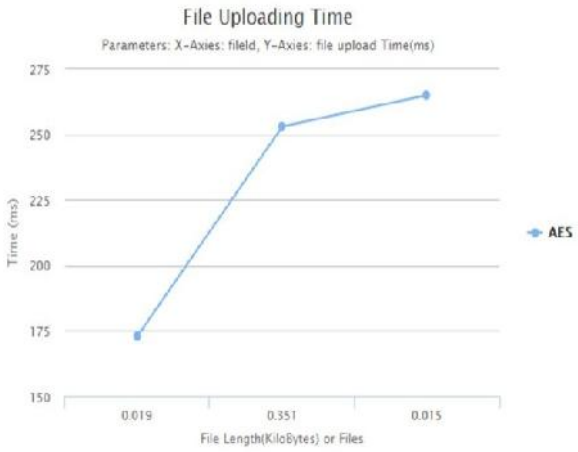
This algorithm is run by the user who has the aggregate key to perform a search. It takes as input the aggregate searchable encryption key k_a and a keyword w, then outputs only one trapdoor Tr.

VI. EXPERIMENTAL SET UP

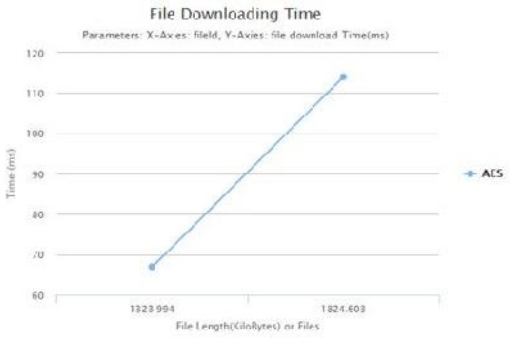
A.Graph

AES :

1)Uploading Time:-



2) Downloading Time



B. *Result Table-*

1) Uploading Time

File Length	***Time(ms)***
19	173
351	253
15	265

2) Downloading Time

File Length	***Time(ms)***
1323994	67
1824603	114

CONCLUSION

Think about the practical problem of privacy of the data sharing scheme based on cloud technique which needs a data owner to give large number of keys to data users to permit them to access his/her

documents, we for the first time propose the concept of key-aggregate searchable encryption(KASE) and construct a solid KASE scheme. Both analysis and evaluation results prove that my work can give an effective solution to constructing practical sharing scheme based on public cloud storage. In a KASE scheme, the owner only needs to give single key to a user when sharing large amount of documents with the user, and the user only needs to submit a solitary trapdoor when he queries overall documents shared by the same owner. Multi cloud is to reduce storage overhead of the customer by compressing the data and reduce computational overhead of the cloud server.

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