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Secure Data Group Sharing and Distribution with Multi-Owner using Multi Cloud Storage Services

Mr. Dipak G. Hotkar[1], Prof. B.R.Solunke[2]

PG Student, Department of Computer Science & Engineering NBNSCOE, Solapur, India[1]

Assistant Professor, Department of Computer Science & Engineering, NBNSCOE, Solapur, India[2]

Abstract: A protected information bunch sharing and contingent spread topic with multi-proprietor in distributed computing, with in which information proprietor will share non-open information with a gathering of clients through the cloud in an exceedingly secure way, and information communicator will share the information to a shiny new group of clients if the properties fulfill the entrance approaches inside the ciphertext. We tend to extra blessing a multiparty get to the executives system over the dispersed figure text, inside which the information co-proprietors will attach new access approaches to the figure text because of their security inclinations. In addition, 3 strategy total ways, along with full grant, proprietor need and greater part license, are given to explain the protection clashes drawback brought about by totally unique access arrangements. Numerous plans are as of late progressed for putting away data on different mists. Conveying information over totally unique distributed storage providers (CSPs) precisely gives clients a positive level of information run the board, for no single reason for assault will release all the information. Nonetheless, impromptu appropriation of information pieces will cause high data uncovering even though misuse numerous mists. An effective stockpiling plan age algorithmic principle upheld bunch for disseminating data lumps with least information escape over numerous mists. So to give greater security to client's information we will partition our information into different squares and transfer those squares onto numerous mists. As each square is on various clouds, if there is assault on any cloud the rest of the squares which are put away on different mists will be protected, this is the means by which we are giving greater security to client's information.

Keywords: Data Sharing, Conditional Proxy re-encryption, Attribute-based encryption, Privacy Conflict, System Attack ability, Remote Synchronization, Distribution and Optimization

I. INTRODUCTION

The fame of distributed computing is acquired from the advantages of rich stockpiling assets and moment get to. It totals the assets of processing infrastructure and then gives on-request benefits over the Internet. Many famous companies are now providing public cloud services, such as Amazon, Google, and Alibaba. These services allow individual users and enterprise users to upload data (e.g. photos, videos and documents) to cloud service provider (CSP), for the purpose of accessing the data at any time anywhere and sharing the data with others. With the more and more fast uptake of devices like laptops, cell phones and tablets, users need associate degree present and massive network storage to handle their ever-growing digital lives. To fulfill these demands, several cloud-based storage and file sharing services like Dropbox, Google Drive and Amazon S3, have gained quality because of the easy-to-use interface and low storage price. However, these centralized cloud storage services are criticized for grabbing the management of users' knowledge that permits storage suppliers to run analytics for promoting and advertising [1]. One possible resolution to scale back the chance of data leak is to use multi cloud storage systems [2], [3], [4], [5] in which no single purpose of attack will leak all the data. A malicious entity, like the one disclosed in recent attacks on privacy [6], would be needed to oblige all the various CSPs on that a user would possibly place her knowledge, so as to induce a complete image of her knowledge. Put simply, as the saying goes, do not put all the eggs in one basket.

The re-encryption keys related to a group of attributes, thus the proxy can re-encrypt the ciphertext only the re-encryption key matches the access policy. During this way, data owner can customize fine-grained dissemination condition for the shared data. For instance, data owner allows project managers within the organization to disseminate the report in OneDrive, while only permits executive directors in finance department to disseminate the project budget in OneDrive during a selected period of time. Besides the necessity of conditional data dissemination, multiparty access control problem for data sharing in cloud computing like cloud collaboration and cloud-based social networks comes along [18, 19], which suggests the special authorization requirements from multiple associated users are often accommodated together to regulate the shared data. Consider an example where a co-

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authoring document or a co-photo in cloud computing with three users, Alice, Bob, and Carol. If Alice who is that the data owner uploads this co-authoring document or co-photo to the CSP and tags both Bob and Carol because the co-owners. Alice can restrict this data to be disseminated to a certain group of users, while the co-owners Bob and Carol may have different privacy concerns about this data. It is a massive and high privacy problem if applying the preference of only one party, which may cause such data to be shared with undesired receivers.

II. RELATED WORK

They made [1], a framework for Ciphertext-Policy Attribute Based Encryption. Our framework takes into consideration another quite encoded get to manage where client's private keys are specified by plenty of qualities and a gathering scrambling information can determine a way over these qualities indicating which clients can decode. Our framework permits strategies to be communicated as any monotonic tree get to structure and is impervious to intrigue assaults during which an assailant may acquire numerous private keys. At long last, we gave a usage of our framework, which incorporated a few of enhancement methods.

Intermediary based, [2] numerous cloud capacity framework that for all intents and purposes tends to the unwavering quality of this cloud reinforcement stockpiling. NCCloud not just gives adaptation to internal failure away, yet additionally permits practical fix when a cloud for all time falls flat. NCCloud executes a viable adaptation of the FMSR codes, which recovers new equality pieces during fix subject to the required level of data excess. Our FMSR code usage dispenses with the encoding necessity of capacity hubs (or cloud) during fix, while guaranteeing that the new arrangement of put away lumps after each round of fix jam the required adaptation to non-critical failure. Our NCCloud model shows the viability of FMSR codes within the cloud reinforcement use, as far as money related expenses and reaction times.

The Internet of Things (IoT) [3], gadgets continually create information, and need the knowledge examination to be fast, which cannot be given by the traditional distributed computing design. With the target of breaking down the IoT information near the gadgets that make and work on the knowledge, edge figuring has been acquainted for the expansion with the sting of the system from distributed computing. Despite the very fact that edge registering encourages distributed computing in tending to the inertness issue of data handling, it likewise brings greater security and protection issues to the present distributed computer system. due to the truth that property based encryption (ABE) underpins fine-grained (or versatile) get to regulate for information things in scrambled structures, ABE has been generally accepted to be an ideal account ensure information security and protection for situations of distributed computing. To accomplish fine-grained get to regulate for the sting figuring condition, during this paper, we proposed a thought named intermediary supported ciphertext-approach characteristic based encryption (PA- CPABE). After portraying a standard development of PA-CPABE, we officially examined its security. What's more, we displayed and actualized a launch of PA-CPABE to assess its proficiency.

In this paper [4], we've a bent to tend to propose a combined the cloud-side and knowledge owner-side access management in encrypted cloud storage, that's proof against DDoS/EDoS attacks and provides resource consumption accounting. Our system supports absolute CP-ABE constructions. The event is secure against malicious information users and a covert cloud provider. We've a bent to tend to relax the protection demand of the cloud provider to covert adversaries, which may be an additional wise and relaxed notion than that with semi-honest adversaries.

We presented [5], the principal personality based communicate encryption (IBBE) conspire with steady size ciphertext and personal keys. One intriguing open issue would be to create an IBBE framework with consistent size ciphertext and personal keys that's secure under a progressively standard supposition, or which accomplishes a more grounded security idea, just like full security in IBE plans.

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To address the data protection [6], problem in cloud computing, we propose and implement a role-based self-contained data protection scheme called RBAC-CPABE. Based on the classic RBAC model, we first propose a data-centric access control model, DC-RBAC, which allows the data owner to specify individualized RBAC policies for every data object. Besides role-level constraints, DC-RBAC also contains user attribute constraints and environment constraints, which correspond to information about the authorized users and contextual information about the environment, respectively. Hence, DC-RBAC achieves more flexible and fine-grained access control. Next, to construct the self-contained data protection mechanism, we fuse the DC-RBAC into ECP-ABE by extending ECP-ABE and defining a policy mapping model. By using RBAC-CPABE, information contained in the data itself determines whether users are authorized to perform decryption rather than counting on other parties.

In this paper [7], we propose a protected customer side deduplication plot KeyD to successfully oversee focalized keys. Information deduplication in our structure is accomplished by co-operations between information proprietors and therefore the Cloud Service Provider (CSP), without support of other confided in outsiders or Key. The board Cloud Service Providers. The safety examination shows that our KeyD guarantees the secrecy of data furthermore, security of joined keys, and well ensures the client possession protection simultaneously. Exploratory outcomes exhibit that the safety of our plan isn't at the value of the exhibition. For our future work, we'll plan to search for approaches to make sure the personality security of data proprietors, which isn't considered in our plan.

From an occupant perspective [8], the cloud security model doesn't yet hold against risk models produced for the ustomary model where the hosts are worked and utilized by an identical association. Nonetheless, there's a uniform advancement towards fortifying the IaaS security model. During this work we displayed a system for confided in foundation cloud arrangement, with two center focuses: VM organization on trusted register hosts and space based insurance of put away information. We depicted intimately the structure, usage furthermore; security assessment of conventions for trusted VM dispatch and space based stockpiling assurance. The arrangements depend upon necessities evoked by an open human services authority, are actualized during a famous open-source IaaS stage and tried on a model sending of a circulated EHR framework. Within the security investigation, we presented a progression of assaults and demonstrated that the conventions hold within the predefined risk model. To accumulate further certainty within the semantic security properties of the conventions, we've demonstrated and checked them with ProVerif [32]. At long last, our execution tests have indicated that the conventions present an inconsequential presentation overhead.

III. PROPOSED ALGORITHM

A. *Description of the Proposed Algorithm:*

1) Register & Login

- In this module, data owner, data co-owner, data disseminator and data user register with system based on his username, password, name, mobile no, and so on.
- Followed by, both are login and access file upload & download process in multi cloud.

2) Encrypt & Upload:

- In this module, a data owner wants to upload his files to Multi-cloud.
- So to do it data owner will require keys, so it sends request to third party auditor.
- Third party auditor generates public key and private key for each request and sends it to the respective data owner.
- After this data owner chooses the policy aggregation strategy amongst full permit, owner priority and majority permit.

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- Then the data owner splits a file into blocks and encrypts each block. At the same time, it generates HMACSHA1 signature for each encrypted block.

- Then upload all encrypted blocks with signatures to multi-cloud.

- After this we have data co-owner in our system that re-encrypts the data which is already encrypted by data owner.

- Like owner, data co-owner also sends request for keys to the third party auditor.

- After this the data co-owner append the policy aggregation strategy amongst full permit, owner priority and majority permit

- The third party auditor sends generated public, private and symmetric key to respective data co-owner.

- Now with keys, data co-owner re-encrypts the data and uploads it to the different cloud.

3) Download & Decrypt:

- In this module we have data disseminator and data user.

- The data disseminator disseminates its data i.e. it holds the record of data owner and co-owners uploaded files.

- Data disseminator broadcast these records to all the data users in the system.

- Now, the registered data user will come to know that which blocks are available to download.

- So the data users request for keys, once they have keys they can download the encrypted blocks of files and also can decrypt the text to get the original one.

IV. PSEUDO CODE

Data Owner:

Steps:

1. Register
2. Login
3. Symmetric Key (AES), Secret Key, Public and Private Key Generation
4. Chooses the policy aggregation strategy amongst the full permit, owner priority and majority permit.
5. Data Owner sends the tagged notification to registered data co-owners.
6. Calculate size of the file.
7. Split or Divide the file into 3 different blocks.
8. Each part of the file is encrypted and uploaded to the multicloud environment.

Data Co-Owner:

Steps:

1. Register
2. Login
3. Symmetric Key (AES), Secret Key, Public and Private Key Generation
4. Appends the policy aggregation strategy to the data owner's blocks.
5. Selects the file amongst the available files and re-encrypt the file data.
6. After this, calculates the file size, and splits the file into 3 different blocks.
7. Each part of the file is encrypted and uploaded to the multi cloud environment.

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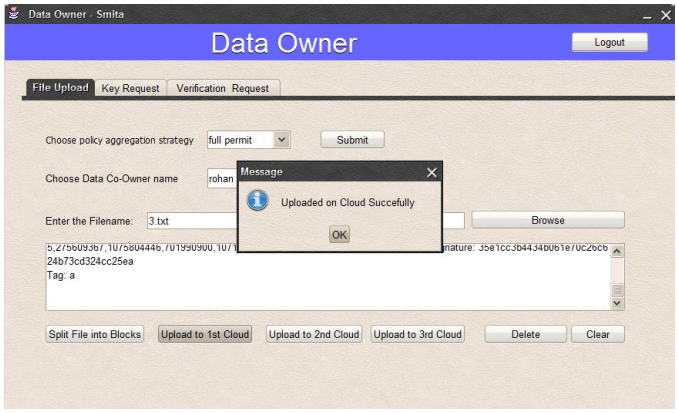
Data User:

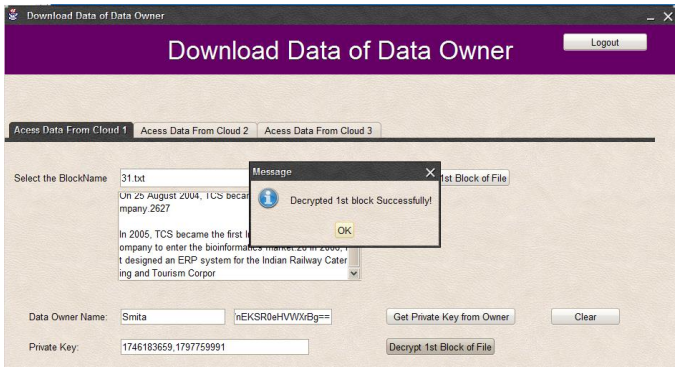
1. Register
2. Login
3. After successful login the data user have two options to download file.
4. First one is it can download data which is uploaded by data owner and second one is it can download data which is re-encrypted by data co-owner.
5. When it choses data owner he will get original data , but with data co-owner due to double encryption data is in encrypted form only.
6. As we have uploaded data to multiple clouds so to access it, we need to make a request for each block.
7. First form first clouds, data user selects the block of the file then it downloads the file.
8. Request for keys and decrypts the text to its original form.
9. Like first block, same procedure is followed for second and third block of the file
10. To download data form data co-owners, blocks are decrypted but they are in encrypted form only as we have applied re-encryption on them so rest of the procedure is same as data owner.

V. SIMULATION RESULTS

In proposed system there are six different users like data owner, data co-owner, data disseminator, data user, third party auditor and cloud service provider.

Registered users in the system sends request for keys to the third party auditor, once users have keys they can perform respective tasks of them. Such as data owner will first choose the policy aggregation strategy from full permit, owner priority and majority permit strategies. After this splits file into blocks and encrypts each block along with signature generated uploads each block to different cloud so that if any block is attacked the remaining blocks will be safe from attacker. And in this project we are implementing multi cloud concept. Now data co-owner gets the tagged notification by data owner it selects policy aggregation strategy to append it to file and re-encrypts the file data and again splits that file into different blocks and upload them to different clouds. Data user with keys can download and decrypt the file data.





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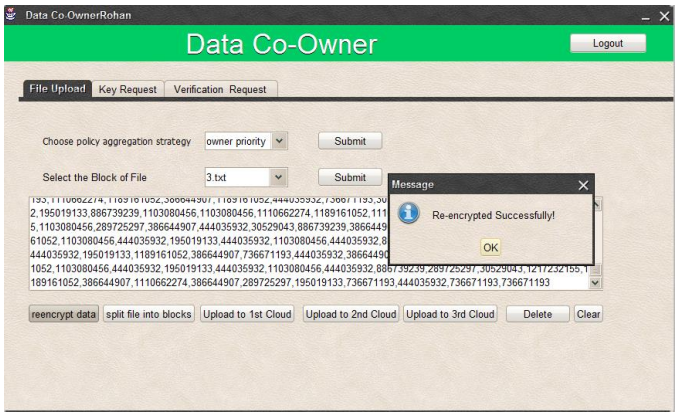

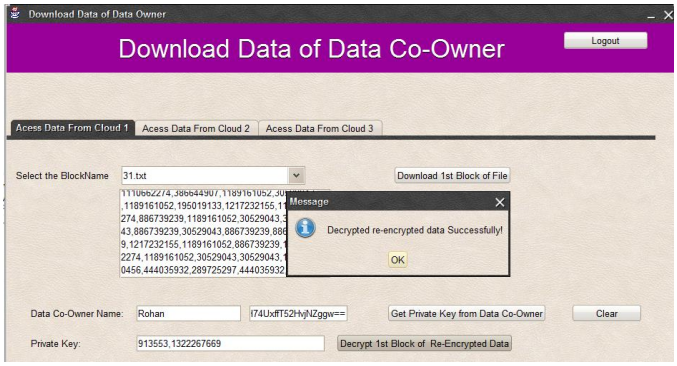

VI. CONCLUSION AND FUTURE WORK

Distributing knowledge on multiple clouds provides users with a certain degree of data run management there in no single cloud supplier are aware of the entire user's knowledge. However, unplanned distribution of information chunks will cause avoidable information run. The data security and privacy is a concern for users in cloud computing. In particular, how to enforce privacy concerns of multiple owners and protect the data confidentiality becomes a challenge. Here, we are providing information leakage aware storage system and confidentiality of the data in a multi cloud environment.

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