A Survey Paper on MONA: Secure Multi-Owner Data Sharing for Dynamic Groups in the Cloud

Mr. Parjanya C.A, Mr. Prasanna Kumar M, Mr. Mahesha H.S

Abstract-- Cloud computing is an emerging computing paradigm in which resources of the computing infrastructure are provided as services over the Internet. As promising as it is, this paradigm also brings forth many new challenges for data security and access control when users confidential against untrusted servers, existing solutions usually apply cryptographic methods by disclosing data decryption keys only to authorized users. One of the biggest concerns with cloud data storage is that of data integrity verification at untrusted servers. To preserve data privacy, a basic solution is to encrypt data files, and then upload the encrypted data into the cloud. To resolve this problem recently the best efficient method MONA presented for secured multi owner data sharing in however we identified some limitations in the same approach in terms of reliability and scalability. Hence in this paper we are further extending the basic MONA by adding the reliability as well as improving the scalability by increasing the number of group managers dynamically.

Index Terms— Cloud Computing, dynamic groups, data sharing, reliability, integrity, scalability.

1 INTRODUTION

1.1 What is cloud computing?

In cloud computing, the cloud service providers (CSPs), such as Amazon, are able to deliver various services to cloud users with the help of powerful datacenters. By migrating the local data management systems into cloud servers, users can enjoy high-quality services and save significant investments on their local infrastructures. Cloud computing is one of the greatest platform which provides storage of data in very lower cost and available for all time over the internet Cloud computing is Internet-based computing, whereby shared resources, software and information are provided to computers and devices on demand. Several trends are opening up the era of Cloud Computing, which is an Internet-based development and use of computer technology. Cloud Computing means more than simply saving on IT implementation costs.

- *Mr. Parjanya C.A, Mtech Student in East west Institute of Technology, Dept of CSE, Bangalore, India*
- *Mr. Prasanna Kumar M, Assistant Professor in East West Institute of Technology, Dept of CSE, Bangalore, India*
- *Mr. Mahesha H.S, Mtech Student in East west Institute of Technology, Dept of CSE, Bangalore, India*

Cloud offers enormous opportunity for new innovation, and even disruption of entire industries. Cloud computing is the long dreamed vision of computing as a utility, where data owners can remotely store their data in the cloud to enjoy on demand high-quality applications and services from a shared pool of configurable computing resources.

1.2 Basic Concept

Maintaining the integrity of data plays a vital role in the establishment of trust between data subject and service provider. Although envisioned as a promising service platform for the Internet, the new data storage paradigm in "Cloud" brings about many challenging design issues which have profound influence on the security and performance of the overall system. One of the biggest concerns with cloud data storage is that of data integrity verification at untrusted servers. What is more serious is that for saving money and storage space the service provider might neglect to keep or deliberately delete rarely accessed data files which belong to an ordinary client. Consider the large size of the outsourced electronic data and the client's constrained resource capability, the core of the problem can be generalized as how can the client find an efficient way to perform

periodical integrity verifications without the local copy of data files. To preserve data privacy, a basic solution is to encrypt data files, and then upload the encrypted data into the cloud [2]. CS2 provides security against the cloud provider, clients are still able not only to efficiently access their data through a search interface but also to add and delete files securely. Several security schemes for data sharing on untrusted servers have been proposed secure file system designed to be layered over insecure network and P2P file systems such as NFS, CIFS, Ocean Store, and Yahoo! Briefcase.

1.3 Advantages and Disadvantages of Cloud Computing:

Advantages:-

- Location Independent
- Less cost (Pay-as-per-you-Use).
- Easy to Maintain.
- Secure Storage and Management
- High level computing

Disadvantages:-

- Lack of control
- Security and privacy.
- Higher operational cost.
- Reliability

2 Literature Survey

In the literature survey we are going to discuss some existing technique for cloud.

a) E. Goh, H. Shacham, N. Modadugu, and D. Boneh [4] the use of SiRiUS is compelling in situations where users have no control over the file server (such as Yahoo! Briefcase or the P2P file storage provided by Farsite). They believe that SiRiUS is the most that can be done to secure an existing network file system without changing the file server or file system protocol. Key management and revocation is simple with minimal out-of-band communication. File system freshness guarantees are supported by SiRiUS using hash tree constructions. SiRiUS contains a novel method of performing file random access in a cryptographic file system without the use of a block server. Extensions to SiRiUS include large scale group sharing using the NNL key revocation construction.

b) B. Wang, B. Li, and H. Li, [5] in this paper, we propose Knox, a privacy-preserving auditing scheme for shared data with large groups in the cloud. They utilize group signatures to compute verification information on shared data, so that the TPA is able to audit the correctness of shared data, but cannot reveal the identity o f the signer on each block. With the group manager's private key, the original user can efficiently add new users to the group and disclose the identities of signers on all blocks. The efficiency of Knox is not affected by the number of users in the group.

c) M. Armbrust, A. Fox, R. Griffith, A.D. Joseph, R.H. Katz, A. Konwinski, G. Lee, D.A. Patterson, A. Rabkin, I. Stoica, and M. Zaharia [2] the data centers hardware and software is what we will call a cloud. When a cloud is made available in a pay-as-you-go manner to the general public, they call it a public cloud; the service being sold is utility computing. They use the term private cloud to refer to internal data centers of a business or other organization, not made available to the general public, when they are large enough to benefit from the advantages of cloud computing that we discuss here. Thus, cloud computing is the sum of SaaS and utility computing, but does not include small or medium-sized data centers, even if these rely on virtualization for management. People can be users or providers of SaaS, or users or providers of utility computing. They focus on SaaS providers (cloud users) cloud providers, which have received less attention than SaaS users.

d) S. Kamara and K. Lauter [3] in this paper consider the problem of building a secure cloud storage service on top of a public cloud infrastructure where the service provider is not completely trusted by the customer. They describe, at a high level, several architectures that combine recent and non-standard cryptographic primitives in order to achieve our goal. Survey the benefits such architecture would provide to both customers and service providers and give an overview of recent advances in cryptography motivated specifically by cloud storage.

e) A. Fiat and M. Naor [6] they introduce new theoretical measures for the qualitative and quantitative assessment of encryption schemes designed for broadcast transmissions. The goal is to allow a central broadcast site to broadcast secure transmissions to an arbitrary set of recipients while minimizing key management related transmissions. They present several schemes that allow centers to broadcast a secret to any subset of privileged users out of a universe of size so that coalitions of users not in the privileged set cannot learn the secret.

f) V. Goyal, O. Pandey, A. Sahai, and B. Waters [7] they develop a new cryptosystem for One-grained sharing of encrypted data that call Key-Policy Attribute-Based Encryption (KP-ABE). In cryptosystem, cipher texts are labelled with sets of attributes and private keys are associated with access structures that control which cipher texts a user is able to decrypt. They demonstrate the applicability of our construction to sharing of audit-log information and broadcast encryption. Our construction supports delegation of private keys which subsumes Hierarchical Identity-Based Encryption (HIBE). The data owner uses a random key to encrypt a file, where the random key is further encrypted with a set of attributes using KP-ABE. Then, the group manager assigns an access structure and the corresponding secret key to authorized users, such that a user can only decrypt a ciphertext if and only if the data file attributes satisfy the access structure. To achieve user revocation, the manager delegates tasks of data file reencryption and user secret key update to cloud servers. However, the single owner manner may hinder the implementation of applications with the scenario, where any member in a group should be allowed to store and share data files with others.

g) D. Pointcheval and J. Stern [8] As Explained in the Introduction, there w ere several proposals for provably secure Signature schemes. However, in all cases, the security was at the cost of a considerable loss in terms of efficiency. Concerning blind signatures, Damgard, Ptzmann and Waidner and more recently at Crypto '97, Juels et al. Have presented some blind signature schemes with a complexity-based of security. Again, the security y is at the cost of inefficiency. In the weaker setting by the random oracle model, we have provided security arguments for practical and even efficient digital signature schemes and blind signature schemes. On the ground of our reductions, one can justify realistic parameters, even if they are not optimal. Further improvements are expected particularly in the case of blind signatures where it should be possible to obtain a reduction polynomial in the size of the keys and in the number of interactions with the signer.

h) Lu et al. [9] proposed a secure provenance scheme, which is built upon group signatures and ciphertext-policy attribute-based encryption techniques. Particularly, the system in their scheme is set with a single attribute. Each user obtains two keys after the registration: a group signature key and an attribute key. Thus, any user is able to encrypt a data file using attribute-based encryption and others in the group can decrypt the encrypted data using their attribute keys. Meanwhile, the user signs encrypted data with her group signature key for privacy preserving and traceability. However, user revocation is not supported in their scheme.

3 Existing System

In the literature study we have seen many methods for secure data sharing in cloud computing, however most methods failed to achieve the efficient as well as secure method for data sharing for groups. To provide the best solutions for the problems imposed by existing methods, recently the new method was presented called MONA [1]. This approach presents the design of secure data sharing scheme, Mona, for dynamic groups in an untrusted cloud. In Mona, a user is able to share data with others in the group without revealing identity privacy to the cloud. Additionally, Mona supports efficient user revocation and new user joining. More specially, efficient user revocation can be achieved through a public revocation list without updating the private keys of the remaining users, and new users can directly decrypt files stored in the cloud before their participation. Moreover, the storage overhead and the encryption computation cost are constant.

Therefore practically in all cases MONA outperforms the existing methods.

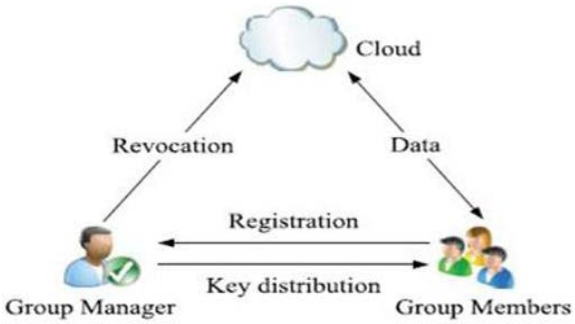

Fig 3.1 Existing System Model

3.1 Disadvantages of Existing System

However as per reliability and scalability concern this method needs to be workout further as if the group manager stop working due to large number of requests coming from different groups of owners, then entire security system of MONA failed down.

4 Proposed Solution

To achieve the reliable and scalable in MONA, in this paper we are presenting the new framework for MONA. In this method we are further presenting how we are managing the risks like failure of group manager by increasing the number of backup group manager, hanging of group manager in case number of requests more by sharing the workload in multiple group managers. This method claims required efficiency, scalability and most importantly reliability.

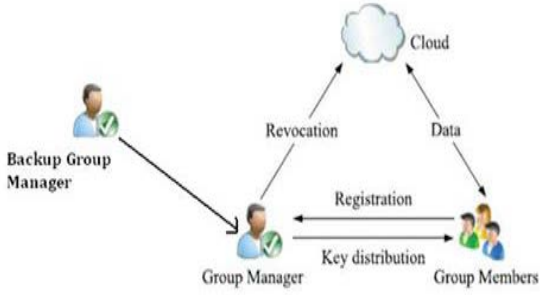

Fig 4.1 Proposed System Model

4.1 Advantage of Proposed System

To overcome the disadvantage of existing system MONA, in the proposed MONA is if the group manager stop working due to large number of requests coming from different groups of owners, then backup group manager will remains available.

5 Conclusions

In conclusion, cloud computing is very attractive environment for business world in term of providing required services in a very cost effective way. However, assuring and enhancing security and privacy practices will attract more enterprises to world of the cloud computing In Thus to achieve the reliable and scalable in MONA, in this paper we are presenting the new framework for MONA. In this method we are further presenting how we are managing the risks like failure of group manager by increasing the number of backup group manager, hanging of group manager in case number of requests more by sharing the workload in multiple group managers. This method claims required efficiency, scalability and most importantly reliability. Extensive analyses show that our proposed scheme satisfies the desired security requirements and guarantees efficiency as well.

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