

# Secure Cloud Storage using Decentralized Access Control with Anonymous Authentication

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**Abstract**—We propose a new decentralized access control scheme for secure data storage in clouds that supports anonymous authentication. In the proposed scheme, the cloud verifies the authenticity of the series without knowing the user's identity before storing data. Our scheme also has the added feature of access control in which only valid users are able to decrypt the stored information. The scheme prevents replay attacks and supports creation, modification, and reading data stored in the cloud. We also address user revocation. Moreover, our authentication and access control scheme is decentralized and robust, unlike other access control schemes designed for clouds which are centralized. The communication, computation, and storage overheads are comparable to centralized approaches.

**Keywords**—Decentralized Access, Authentication, Attribute-based signatures, Attribute-based encryption, Cloud storage, Policy based access, Renewal policy.

## introduction

Cloud computing is a rising computing standard in which assets of the computing framework are given as a service over the Internet. As guaranteeing as it may be, this standard additionally delivers a lot of people new challenges for data security and access control when clients outsource sensitive data for offering on cloud servers, which are not inside the same trusted dominion as data possessors. Numerous services like email, Net banking and so forth... are given on the Internet such that customers can utilize them from anyplace at any time. Indeed cloud storage is more adaptable, how the security and protection are accessible for the outsourced data turns into a genuine concern. The three points of this issue are availability, confidentiality and integrity. To accomplish secure data transaction in cloud, suitable cryptography method is utilized. The data possessor must encrypt the record and then store the record to the cloud. Assuming that a third person downloads the record, they may see the record if they had the key which is utilized to decrypt the encrypted record. Once in a while this may be failure because of the technology improvement and the programmers. To overcome the issue there is lot of procedures and techniques to make secure transaction and storage.

Recently addressed Anonymous authentication for data archiving to clouds. Anonymous authentication is the procedure of accepting the client without the details of the client. So the cloud server doesn't know the details of the client, which gives security to the clients to conceal their details from other clients of that cloud.

## REMAINING CONTENTS

### Existing System

Much of the data stored in clouds is highly sensitive, for example, medical records and social networks. Security and privacy are, thus, very important issues in cloud computing. In one hand, the user should authenticate itself before initiating any transaction, and on the other hand, it must be ensured that the cloud does not tamper with the data that is outsourced. User privacy is also required so that the cloud or other users do not know the identity of the user. The cloud can hold the user accountable for the data it outsources, and likewise, the cloud is itself accountable for the services it provides. The validity of the user who stores the data is also verified. Apart from the technical solutions to ensure security and privacy, there is also a need for law enforcement.

Efficient search on encrypted data is also an important concern in clouds. The clouds should not know the query but should be able to return the records that satisfy the query. This is achieved by means of searchable encryption [3], [4]. The keywords are sent

to the cloud encrypted, and the cloud returns the result without knowing the actual keyword for the search. The problem here is that the data records should have keywords associated with them to enable the search. The correct records are returned only when searched with the exact keywords. Security and privacy protection in clouds are being explored by many researchers. Wang et al. [2] addressed storage security using Reed-Solomon erasure-correcting codes. Authentication of users using public key cryptographic techniques has been studied in [5]. Many homomorphic encryption techniques have been suggested [6], [7] to ensure that the cloud is not able to read the data while performing computations on them. Using homomorphic encryption, the cloud receives ciphertext of the data and performs computations on the ciphertext and returns the encoded value of the result. The user is able to decode the result, but the cloud does not know what data it has operated on. In such circumstances, it must be possible for the user to verify that the cloud returns correct results. Accountability of clouds is a very challenging task and involves technical issues and law enforcement. Neither clouds nor users should deny any operations performed or requested. It is important to have log of the transactions performed; however, it is an important concern to decide how much information to keep in the log. Accountability has been addressed in Trust Cloud [8]. Secure provenance has been studied in [8].

## Proposed System

The new system provides the user privacy as well as data security. It also provides the access control over the data. The user privacy is maintained by anonymous authentication. Existing work [2], [3], [4], [5], [6] on access control in cloud are centralized in nature. The scheme in [8] uses a symmetric key approach and does not support authentication. The schemes [2], [3], [6] do not support authentication as well. Earlier work by Zhao et al. [5] provides privacy preserving authenticated access control in cloud. However, the authors take a centralized approach where a single key distribution center (KDC) distributes secret keys and attributes to all users. Unfortunately, a single KDC is not only a single point of failure but difficult to maintain because of the large number of users that are supported in a cloud environment. We, therefore, emphasize that clouds should take a decentralized approach while distributing secret keys and attributes to users. It is also quite natural for clouds to have many KDCs in different locations in the world. Although Yang et al. [4] proposed a decentralized approach, their technique does not authenticate users, who want to remain anonymous while accessing the cloud. In an earlier work, Ruj et al. [6] proposed a distributed access control mechanism in clouds. However, the scheme did not provide user authentication. The other drawback was that a user can create and store a file and other users can only read the file. Write access was not permitted to users other than the creator.

## CONCLUSION

We have presented a decentralized access control technique with anonymous authentication, which provides user revocation and prevents replay attacks. The cloud does not know the identity of the user who stores information, but only verifies the user's credentials. Key distribution is done in a decentralized way. One limitation is that the cloud knows the access policy for each record stored in the cloud.

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