



the user. For example, a user would like to store some sensitive information but does not want to be recognized. The user might want to post a comment on an article, but does not want his/her identity to be disclosed. However, the user should be able to prove to the other users that he/ she is a valid user who stored the information without revealing the identity.

## 2. Literature Survey

Vipul Goyal, Omkant Pandey, Amit Sahai, Brent Waters[27]introduced the concept of Attribute-Based Encryption for Fine Grained Access Control of Encrypted Data in 2006. He introduces the new cryptosystem for fine grained sharing of encrypted data that we call Key-Policy Attribute-Based Encryption (KPABE). In cryptosystem, ciphertexts are labeled with sets of attributes and private keys are associated with access structures that control which ciphertexts a user is able to decrypt. Fine-grained access control systems facilitate granting differential access rights to a set of users and allow flexibility in specifying the access rights of individual users. Several techniques are known for implementing fine grained access control. Secret-sharing schemes (SSS) are used to divide a secret among a number of parties.

Matthew Pirretti and Brent Waters[31]introduce a novel secure information management architecture based on emerging attribute-based encryption (ABE) primitives also they propose cryptographic optimizations in Secure Attribute Based Systems in 2007. A performance analysis of ABE system and example applications demonstrates the ability to reduce cryptographic costs by as much as 98% over previously proposed constructions. Through this, demonstrates that the attribute system is an efficient solution for securely managing information in large, loosely-coupled, distributed systems. Decryption decrypts a ciphertext encrypted by the Encryption. This process begins with the decrypting party verifying that they have the required attributes. The party performing decryption will then use their attributes to decrypt the decrypt the ciphertext in order to obtain the AES and HMAC key.

John Bethencourt, Amit Sahai, Brent Waters[26]introduces Ciphertext-Policy Attribute-Based Encryption in 2008. they employ a trusted server to store the data and mediate access control. In several distributed systems a user should only be able to access data if a user posses a certain set of credentials or attributes. Currently, the only method for enforcing such policies is to employ a trusted server to store the data and mediate access control. However, if any server storing the data is compromised, then the confidentiality of the data will be compromised. In addition, they provide an implementation of our system and give performance measurements. The primary challenge in this line of work is to find a new systems with elegant forms of expression that produce more than an arbitrary combination of techniques.

Sabrina De Capitani di Vimercati, Sara Foresti, Sushil Jajodia, Stefano Paraboschi, Pierangela Samarati describes combination of access control and cryptography in 2010. It

illustrate the basic principles on which an architecture for combining access control and cryptography can be built. then illustrate an approach for enforcing authorization policies and supporting dynamic authorizations, allowing policy changes and data updates at a limited cost in terms of bandwidth and computational power. It We also described an approach for policy evolution that takes into account the main features of the scenario and is able to guarantee in most cases confidentiality of the information in the presence of significant policy updates, clearly identifying the exposure to collusion when this risk may arise. Other issues to be investigated include the integration with the Web paradigm, and the efficient execution of queries.

Markulf Kohlweiss, Ueli Maurer, Cristina Onete, Bjorn Tackmann, Daniele Venturi[9]introduced Anonymity-preserving Public-Key Encryption:A Constructive Approach where public-key cryptosystems with enhanced security properties have been proposed. it investigate constructions as well as limitations for preserving receiver anonymity when using public-key encryption (PKE). They use the constructive cryptography approach by Maurer and Renner and interpret cryptographic schemes as constructions of a certain ideal resource (e.g. a confidential anonymous channel) from given real resources (e.g. a broadcast channel). We define appropriate anonymous communication resources and show that a very natural resource can be constructed by using a PKE scheme which fulfills three properties that appear in cryptographic Literature. results do not only support the trust in existing schemes and constructions; they also show that the simpler and more efficient weakly robust schemes can be used safely.

Junbeom Hur, Dong Kun Noh[23] introduces the concept of Attribute-Based Access Control with Efficient Revocation in Data Outsourcing Systems in May 16, 2012. The attribute based crypto-systems were introduced such as Ciphertext-Policy Attribute-Base Encryption (CP-ABE) with an addition of two new functions. The first function is  $KEKGen(U)$  which is used to generate keys to encrypt attributes for groups. The other extra function is the  $ReEncrypt(CT;G)$  which is a re-encryption that takes the ciphertext and re-encrypt it so that a user in Group G can only access it.

R.Ranjith and D.Kayathri Devi[16] describes the concept of Secure Cloud Storage using Decentralized Access Control with Anonymous Authentication in 2013. we implemented secure cloud storage by providing access to the files with the policy based file access using Attribute Based Encryption (ABE) scheme with RSA key public-private key combination. Private Key is the combination of the user's credentials. So that high security will be achieved. Time based file Revocation scheme is used for file assured deletion. When the time limit of the file expired, the file will be automatically revoked and cannot be accessible to anyone in future. Manual Revocation also supported. Policy based file renewal is proposed. The Renewal can be done by providing the new key to the existing file, will remains the file until the new time limit reaches.

Mr. Parjanya C.A and Mr. Prasanna Kumar M[15]describes the concept of Advance Secure Multi-Owner Data Sharing

for Dynamic Groups in the Cloud in march 2014. They were presented the new framework for MONA. In this method further presented how to manage 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. Here we also show that how user gets extra time even after the time out this also one of the advantage of proposed schema.

S Divya Bharathy and T Ramesh[14] intruded the concept of privacy preserving access control scheme for data storage, which supports anonymous authentication and performs decentralized key management in Securing Data Stored in Clouds Using Privacy Preserving Authenticated Access Control in April 2014. In the proposed scheme, the cloud adopts an access control policy and attributes hiding strategy to enhance security. This new scheme supports secure and efficient dynamic operation on data blocks, including: data update, creation, modification and reading data stored in the cloud. Moreover, our authentication and access control scheme is decentralized and robust, unlike other access control schemes designed for clouds which are centralized.

User revocation and access control policies highly contributes to avoid abuse of cloud services and shared technology issues. Sushmita Ruj, Milos Stojmenovic, AmiyaNayak[1]-[17] introduces Decentralized Access Control with Anonymous Authentication of Data Stored in Clouds in 2014. They 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. 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. In future, we would like to hide the attributes and access policy of a user.

3	2008	John Bethencourt, Amit Sahai, Brent Waters	introduces Ciphertext-Policy Attribute-Based Encryption and the confidentiality of the data will be compromised
4	2010	Sabrina De Capitani di Vimercati, Sara Foresti, Sushil Jajodia, Stefano Paraboschi, Pierangela Samarati	combine access control and cryptography. Allows policy changes and data updates at a limited cost in terms of bandwidth and computational power.
5	2012	Junbeom Hur, Dong Kun Noh	The attribute based crypto-systems were introduced such as Ciphertext-Policy Attribute-Base Encryption (CP-ABE) with an addition of new functions.
6	2013	R.Ranjith and D.Kayathri Devi	Secure cloud storage by providing access to the files with the policy based file access using Attribute Based Encryption (ABE) scheme with RSA key public-private key combination
7	2014	Mr. Parjanya C.A and Mr. Prasanna Kumar M	New framework for MONA and to manage the risks like failure of group manager by increasing the number of backup group manager
8	2014	S Divya Bharathy and T Ramesh	Supports anonymous authentication and performs decentralized key management in Securing Data Stored in Clouds. , the cloud adopts an access control policy and attributes hiding strategy to enhance security
9	2014	Sushmita Ruj, Milos Stojmenovic, AmiyaNayak	The cloud verifies the authenticity of the series without knowing the user's identity before storing data. only valid users are able to decrypt the stored information.

Table 1: Tables of Comparison

SR. No.	Year	Author	Advantages
1	2006	Vipul Goyal, Omkant Pandey, Amit Sahai, Brent Waters	Introduces new cryptosystem for ew encrypted data
2	2007	Matthew Pirretti and Brent Waters	Information management architecture based on emerging attribute-based encryption (ABE) primitives and cryptographic optimizations in Secure Attribute Based Systems

### 3. Shared Technology Issues

Scalable way by sharing infrastructure, platforms, and applications. Whether it's the underlying components that make up this infrastructure (e.g. CPU caches Cloud service providers deliver their services in a, GPUs, etc.) that were not designed to offer strong isolation properties for a multi-tenant architecture (IaaS), re-deployable platforms (PaaS), or multi-customer applications (SaaS), the threat of shared vulnerabilities exists in all delivery models. A defensive in-depth strategy is recommended and should include compute, storage, network, application and user security enforcement, and monitoring, whether the service model is IaaS, PaaS, or SaaS. The key is that a single vulnerability or misconfiguration can lead to a compromise across an entire provider's cloud. Access control in clouds is gaining attention because it is important that only authorized users have access to valid service. A huge amount of information is being stored in the cloud, and much of this is sensitive information. Care should be taken to ensure access control of this sensitive information which can often related to health, important documents ( as in Google Docs or Dropbox) or

even personal information (as in social networking). Access control is also gaining importance in online social networking where users (members) store their personal information, pictures, videos and share them with selected groups of users or communities they belong to. It is not just enough to store the contents securely in the cloud but it might also be necessary to ensure anonymity of the user. For example, a user would like to store some sensitive information but does not want to be recognized.

4. Techniques used in Process

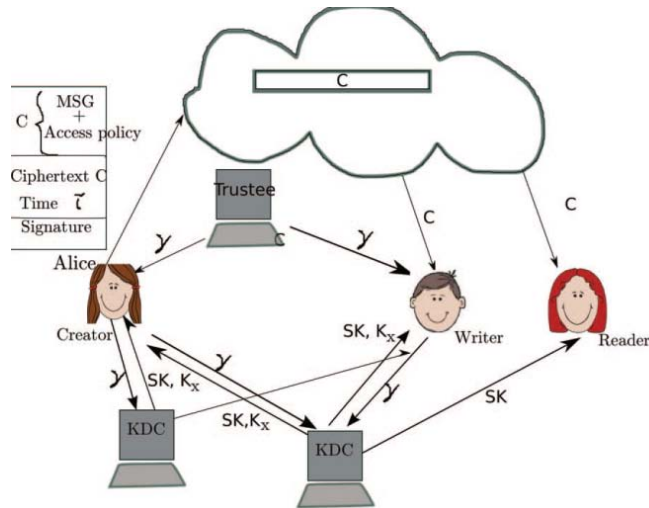


Figure: Cloud Architecture

1) System Initialization

Select a prime  $q$ , and groups  $G1$  and  $G2$ , which are of order  $q$ . We define the mapping  $\hat{e} : G1 \times G1 \rightarrow G2$ . Let  $g1, g2$  be generators of  $G1$  and  $h_j$  be generators of  $G2$ , for  $j \in [tmax]$ , for arbitrary  $tmax$ . Let  $H$  be a hash function. Let  $A0 = ha0$ , where  $a0 \in \mathbb{Z}^*_q$  is chosen at random.  $(TSig, TVer)$  mean  $TSig$  is the private key with which a message is signed and  $TVer$  is the public key used for verification. The secret key for the trustee is  $TSK = (a0, TSig)$  and public key is  $TPK = (G1, G2, H, g1, A0, h0, h1, \dots, htmax, g2, TVer)$ .

2) User Registration

For a user with identity  $Uu$  the KDC draws at random  $Kbase \in G$ . Let  $K0 = K1/a0$  base. The following token  $\gamma$  is output  $\gamma = (u, Kbase, K0, \rho)$ , where  $\rho$  is signature on  $u || Kbase$  using the signing key  $TSig$ .

3) KDC setup

We 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. The architecture is decentralized, meaning that there can be several KDCs for key management.

4) Attribute generation

The token verification algorithm verifies the signature contained in  $\gamma$  using the signature verification key  $TVer$  in  $TPK$ . This algorithm extracts  $Kbase$  from  $\gamma$  using  $(a, b)$  from  $ASK[i]$  and computes  $Kx = K1/(a+bx)$  base,  $x \in J[i]$ ,

$u]$ . The key  $Kx$  can be checked for consistency using algorithm  $ABS.KeyCheck(TPK, APK[i], \gamma, Kx)$ , which checks  $\hat{e}(Kx, AijBx ij) = \hat{e}(Kbase, hj)$ , for all  $x \in J[i, u]$  and  $j \in [tmax]$ .

5) Sign

The access policy decides who can access the data stored in the cloud. The creator decides on a claim policy  $Y$ , to prove her authenticity and signs the message under this claim. The ciphertext  $C$  with signature is  $c$ , and is sent to the cloud. The cloud verifies the signature and stores the ciphertext  $C$ . When a reader wants to read, the cloud sends  $C$ . If the user has attributes matching with access policy, it can decrypt and get back original message.

6) Verify

The verification process to the cloud, it relieves the individual users from time consuming verifications. When a reader wants to read some data stored in the cloud, it tries to decrypt it using the secret keys it receives from the KDCs.

5. Conclusion and Future Scope

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. It proposes a decentralized approach, the technique does not authenticate users, who want to remain anonymous while accessing the cloud. It added features which enables to authenticate the validity of the message without revealing the identity of the user who has stored information in the cloud. we also address user revocation. We use attribute based signature scheme to achieve authenticity and privacy.

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