MACAW PUBLICATIONS
Scientific Research Journals

Volume 2, Issue 7, July-2016, pp. 113-118 ISSN [O]: 2455-4545

Macaw International Journal of advanced Research in Computer Science and Engineering (MIJARCSE)

Available online at: http://www.macawpublications.com

Preventing From Collusion Data Sharing Mechanism for Dynamic Group in the Cloud

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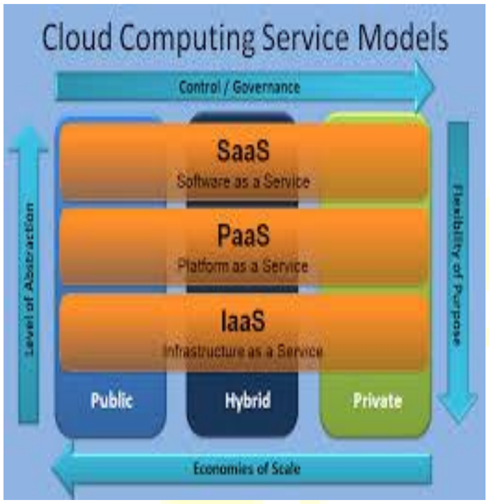
ABSTRACT:

Benefited from cloud computing, users can achieve an effective and economical approach for data sharing among group members in the cloud with the characters of low maintenance and little management cost. Meanwhile, we must provide security guarantees for the sharing data files since they are outsourced. Unfortunately, because of the frequent change of the membership, sharing data while providing privacy-preserving is still a challenging issue, especially for an untrusted cloud due to the collusion attack. Moreover, for existing schemes, the security of key distribution is based on the secure communication channel, however, to have such channel is a strong assumption and is difficult for practice. In this paper, we propose a secure data sharing scheme for dynamic members. First, we propose a secure way for key distribution without any secure communication channels, and the users can securely obtain their private keys from group manager. Second, our scheme can achieve fine-grained access control, any user in the group can use the source in the cloud and revoked users cannot access the cloud again after they are revoked. Third, we can protect the scheme from collusion attack, which means that revoked users cannot get the original data file even if they conspire with the untrusted cloud. In our approach, by leveraging polynomial function, we can achieve a secure user revocation scheme. Finally, our scheme can achieve fine efficiency, which means previous users need not to update their private keys for the situation either a new user joins in the group or a user is revoked from the group.

1. INTRODUCTION

Cloud computing is a type of computing that relies on sharing computing resources rather than having local servers or personal devices to handle applications. Cloud computing is comparable to grid computing, a type of computing where unused processing cycles of all computers in a network are harnesses to solve problems too intensive for any stand-alone machine. In cloud computing, the word cloud (also phrased as "the cloud") is used as a metaphor for "the Internet,". so the phrase cloud computing means "a type of Internet-based computing," where different services such as servers, storage and applications are delivered to an organization's computers and devices through the Internet.

1.2. SERVICE MODELS



[Figure 1.1] service models

Software as a Service (SaaS). The traditional model of software distribution, in which software is purchased for and installed on personal computers, is sometimes referred to as Software-as-a-Product.Software-as-a-Service is a software distribution model in which applications are hosted by a vendor or service provider and made available to customers over a network, typically the Internet. SaaS is becoming an increasingly prevalent delivery model as underlying technologies that support web services and service-oriented architecture (SOA) mature and new developmental approaches become popular.

SaaS is also often associated with a pay-as-you-go subscription licensing model. Mean-while, broadband service has become increasingly available to support user access from more areas around the world.Examples are Google's Gmail and Apps, instant messaging from AOL, Yahoo and Google.

Platform as a Service (PaaS). Cloud computing has evolved to include platforms for building and running custom web-based applications, a concept known as Platform-as-a-Service. PaaS is an outgrowth of the SaaS application delivery model.

The PaaS model makes all of the facilities required to support the complete life cycle of building and delivering web applications and services entirely available from the Internet, all with no software downloads or installation for developers, IT managers, or end users.

Infrastructure as a Service (IaaS). The capability provided to the consumer is the provision of grids or clusters or virtualized servers, processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems. The highest profile example is Amazon's Elastic Compute Cloud (EC2) and Simple Storage Service, but IBM and other traditional IT vendors are also offering services, as is telecom-and-more provider Verizon Business.

Communication-as-a-Service (CaaS) [7]:A CaaS model allows a CaaS provider's business customers to selectively deploy communications features and services throughout their company on a pay-as-yougo basis for service(s) used. CaaS is designed on a utility-like pricing model that provides users with comprehensive, flexible, and (usu-ally) simple-tounderstand service plans.

2. EXISTING SYSTEM

In cloud computing, users can achieve an effective and economical approach for data sharing among group members in the cloud with the characters of low maintenance and little management cost. Meanwhile, we must provide security guarantees for the sharing data files since they are outsourced. Unfortunately, because of the frequent change of the membership, sharing data while providing privacy-preserving is still a challenging issue, especially for an untrusted cloud due to the collusion attack. Moreover, for existing schemes, the security of key distribution is based on the secure communication channel, however, to have such channel is a strong assumption and is difficult for practice Proposed System proposed a secure provenance scheme by leveraging group signatures and ciphertext- policy attribute-based encryption techniques [9]. Each user obtains two keys after the registration while the attribute key is used to decrypt the data which is encrypted by the attribute-based encryption and the group signature key is used for privacy-preserving and traceability. However, the revocation is not supported in this scheme.

Secondly, our scheme can achieve fine-grained access control, any user in the group can use the source in the cloud and revoked users cannot access the cloud again after they are revoked.

Thirdly, we can protect the scheme from collusion attack, which means that revoked users cannot get the original data file even if they conspire with the untrusted cloud. In our approach, by leveraging polynomial function, we can achieve a secure user revocation scheme.

Finally, our scheme can achieve fine efficiency, which means previous users need not to update their private keys for the situation either a new user joins in the group or a user is revoked from the group. Problem Statement Data confidentiality requires that unauthorized users including the cloud are incapable of learning the content of the stored data. To maintain the availability of data confidentiality for dynamic groups is still an important and challenging issue. Specifically, revoked users are unable to decrypt the stored data file after the revocation.

Scope Cloud computing, users can achieve an effective and economical approach for data sharing among group members in the cloud with the characters of low maintenance and little management cost. Meanwhile, we must provide security guarantees for the sharing data files since they are outsourced. Unfortunately, because of the frequent change of the membership, sharing data while providing privacy-preserving is still a challenging issue, especially for an un trusted cloud due to the collusion attack.

3.PROPOSED SYSTEM

We propose a secure data sharing scheme for dynamic members. Firstly, we propose a secure way for key distribution without any secure communication channels, and the users can securely obtain their private keys from group manager. Secondly, our scheme can achieve fine-grained access control, any user in the group can use the source in the cloud and revoked users cannot access the cloud again after they are revoked. Thirdly, we can protect the scheme from collusion attack, which means that revoked users cannot get the original data file even if they conspire with the untrusted cloud. In our approach, by leveraging polynomial function, we can achieve a secure user revocation scheme.

Finally, our scheme can achieve fine efficiency, which means previous users need not to update their private keys for the situation either a new user joins in the group or a user is revoked from the group. our scheme is able to support dynamic groups efficiently, when a new user joins in the group or a user is revoked from the group, the private keys of the other users do not need to be recomputed and updated. Moreover, our scheme can achieve secure user revocation, the revoked users can not be able to get the original data files once they are revoked even if they conspire with the untrusted cloud.

3.2.1. Advantage of proposed system

We provide security analysis to prove the security of our scheme. In addition, we also perform simulations to demonstrate the efficiency of our scheme. Conclusion: we design a secure anti-collusion data sharing scheme for dynamic groups in the cloud. In our scheme, the users can securely obtain their private keys from group manager Certificate Authorities and secure communication channels. Our scheme is able to support dynamic groups efficiently, when a new user joins in the group or a user is revoked from the group, the private keys of the other users do not need to be recomputed and updated. Moreover, our scheme can achieve secure user revocation; the revoked users can not be able to get the original data files once they are revoked even if they conspire with the untrusted cloud. **Group Manager:** Group manager takes charge of system parameters generation, user registration, and user revocation. In the practical applications, the group manager usually is the leader of the group. Therefore, we assume that the group manager is fully trusted by the other parties.

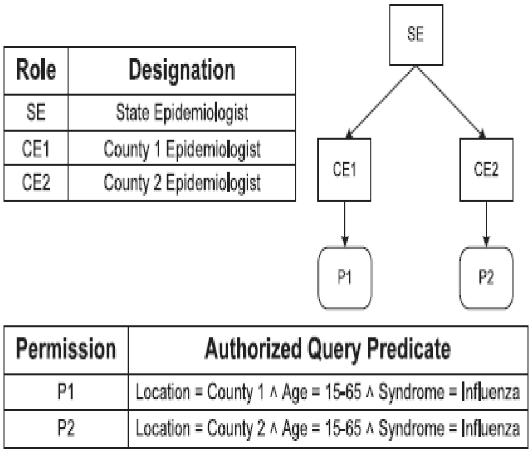
Group members: Group members (users) are a set of registered users that will store their own data into the cloud and share them with others. In the scheme, the group membership is dynamically changed, due to the new user registration and user revocation. We describe the main design goals of the proposed scheme including key distribution, data confidentiality, access control and efficiency as follows:

Key Distribution: The requirement of key distribution is that users can securely obtain their private keys from the group manager without any Certificate Authorities. In other existing schemes, this goal is achieved by assuming that the communication channel is secure, however, in our scheme, we can achieve it without this strong assumption.

Access control: First, group members are able to use the cloud resource for data storage and data sharing. Second, unauthorized users cannot access the cloud resource at any time, and revoked users will be incapable of using the cloud resource again once they are revoked. Data **confidentiality:** Data confidentiality requires that unauthorized users including the cloud are incapable of learning the content of the stored data. To maintain the availability of data confidentiality for dynamic groups is still an important and challenging issue. Specifically, revoked users are unable to decrypt the stored data file after the revocation.

Efficiency: Any group member can store and share data files with others in the group by the cloud. User revocation can be achieved without involving the others, which means that the remaining users do not need to update their private keys. Cloud module: cloud module plays an important role ,group managers upload some files into cloud those files are stored in encrypted format because a secure access control scheme on encrypted data in cloud storage by invoking role-based encryption technique.

3.5. Access control policy:



Role	Designation
SE	State Epidemiologist
CE1	County 1 Epidemiologist
CE2	County 2 Epidemiologist

Permission	Authorized Query Predicate
P1	Location = County 1 ∧ Age = 15-65 ∧ Syndrome = Influenza
P2	Location = County 2 ∧ Age = 15-65 ∧ Syndrome = Influenza

[Figure 3.1] access control policy

Syndromic surveillance systems are used at the state and federal levels to detect and monitor threats to public health. The department of health in a state collects the emergency department data (age, gender, location, time of arrival, symptoms, etc.) from county hospitals daily. Generally, each daily update consists of a static instance that is classified into syndrome categories by the department of health. Then, the surveillance data is anonymized and shared with departments of health at each county. An access control policy is given in Fig. 1 that allows the roles to access the tuples under the authorized predicate, e.g., Role CE1 can access tuples under PermissionP1. The epidemiologists at the state and county level suggest community containment measures ,e.g., isolation or quarantine according to the number of persons infected in case of a flu outbreak. According to the population density in a county, an epidemiologist can advise isolation if the number of persons reported with influenza are greater than 1,000 and quarantine if that number is greater than 3,000 in a single day. The anonymization adds imprecision to the query results and the imprecision bound for each query ensures that the results are within the tolerance required. If the imprecision bounds are not satisfied then unnecessary false alarms are generated due to the high rate of false positives.

4. CONCLUSION

We outline a protected against agreement information sharing plan for element bunches in the cloud. In our plan, the clients can safely acquire their private keys from gathering director Certificate Authorities and secure correspondence channels. Likewise, our plan can bolster dynamic gatherings proficiently, when another client joins in the gathering or a client is denied from the gathering, the private keys of alternate clients don't should be recomputed and redesigned. In addition, our plan can accomplish secure client repudiation, the disavowed clients can not have the capacity to get the first information records once they are denied regardless of the possibility that they plot with the un trusted cloud.

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