Group Data Distribution In Cloud Computing Using Key Agreement

SHRUTI DHAR, RUSHIKESH KANDE, NINAD SHINDE, RAMESH NADAR, Prof. Ashok Kumar Kalal
ACT's Alard College of Engineering & Management Pune

Abstract: Data sharing in cloud computing permits multiple participants to freely share the cluster data that improves the potency of labor in cooperative environments and has widespread potential applications. However, how to make positive the protection data of data of knowledge sharing among and thus the due to expeditiously share the out sourced information in Associate in Nursing very cluster manner unit of measurement formidable challenges. Note that key agreement protocols have contend a very necessary role in secure and economical cluster data sharing in cloud computing. throughout this paper, by taking advantage of the Centro parallel balanced incomplete block vogue (SBIBD), we have a tendency to tend to gift a novel block design-based key agreement protocol that supports multiple participants, which may exile extend the amount of participants in Associate in Nursing very cloud surroundings the structure of the block vogue. Supported the planned cluster data sharing model, we've a bent to gift general formulas for generating the common conference key K for multiple participants. Note that by taking advantage of the block vogue, the method complexity of the planned protocol linearly will increase with the amount of participants and to boot the communication quality is greatly reduced. To boot, the fault tolerance property of our protocol permits the cluster data sharing in cloud computing to face to completely different key attacks, that is analogous to protocol.

Keywords :Key agreement protocol, centro symmetric balanced incomplete block style (SBIBD), data sharing, cloud computing.

Introduction: CLOUD computing and cloud storage became hot topics in recent decades. unit dynamical the approach we've an inclination to measure and greatly rising production efficiency in some areas. At present, due to restricted storage resources and additionally the necessity for convenient access, we've an inclination to love higher to store all sorts of data in cloud servers, that's to boot AN honest chance for firms and organizations to avoid the overhead of deploying and maintaining instrumentality once data unit keep regionally. The cloud server provides degree open and convenient storage platform for folks and organizations, however it additionally introduces security problems. As AN example, a cloud system might even be subjected to attacks from every malicious users and cloud suppliers. In these eventualities, it is vital to confirm the protection of the keep data among the cloud. In several schemes were planned to preserve the privacy of the outsourced data. The upper than schemes only thought-about security problems with one data owner. However, in some applications, multiple data householders would adore to firmly share their data throughout a cluster manner. Therefore, a protocol that supports secure cluster data sharing beneath cloud computing is needed. A key agreement protocol is utilized to urge a regular conference key for multiple participants to create certain the protection of their later communications, and this protocol is applied in cloud computing to support secure and economical knowledge sharing. Since it completely was introduced by Diffie-Hellman in their seminal paper, the key agreement protocol has become one of the essential crypto logical primitives. the essential version of the Diffie-Hellman protocol provides degree economical answer to the matter of constructing a regular secret key between a pair of participants. In cryptography, a key agreement protocol might be a protocol among that a pair of or further parties will agree on a key in such the method that every influence the result. By mistreatment the key agreement protocol, the conferees will firmly send and receive messages from each other mistreatment the common conference key that they agree upon beforehand. Specifically, a secure key agreement protocol ensures that the individual cannot get the generated key by implementing

malicious attacks, like eavesdropping. Thus, the key agreement protocol is wide used in interactive communication environments with high security needs (e.g., remote board conferences, teleconferences, cooperative workspaces, oftenest identification cloud computing thus on). The Diffie-Hellman key agreement provides the thanks to generate keys. However, it does not offer degree authentication service, that creates it in danger of man within the middle attacks. this instance is addressed by adding some sorts of authentication mechanisms to the protocol, as planned by Law et al. in. to boot, the Diffie-Hellman key agreement can only support a pair of participants. afterwards, to resolve the varied key attacks

Literature Survey:

1)Paper Name: Privacy-Preserving Multikeyword Ranked Search over Encrypted Cloud Data

Author: Ning Cao, Cong Wang, Ming Li, Kui Ren, and Wenjing Lou

Description: With the advent of cloud computing, data owners are motivated to outsource their complex data management systems from local sites to the commercial public cloud for great flexibility and economic savings. But for protecting data privacy, sensitive data has to be encrypted before outsourcing, which obsoletes traditional data utilization based on plaintext keyword search. Thus, enabling an encrypted cloud data search service is of paramount importance. Considering the large number of data users and documents in the cloud, it is necessary to allow multiple keywords in the search request and return documents in the order of their relevance to these keywords. Related works on searchable encryption focus on single keyword search or Boolean keyword search, and rarely sort the search results. In this paper, for the first time, we define and solve the challenging problem of privacy preserving multi-keyword ranked search over encrypted cloud data (MRSE). A set of strict privacy requirements for such a secure cloud data utilization system.

2) Paper Name: Enabling Cloud Storage Auditing with Key-Exposure Resistance

Author: Jia Yu, Kui Ren, Cong Wang

Description: Cloud storage auditing is viewed as an important service to verify the integrity of the data in public cloud. Current auditing protocols are all based on the assumption that the clients secret key for auditing is absolutely secure. However, such assumption may not always be held, due to the possibly weak sense of security and/or low security settings at the client. If such a secret key for auditing is exposed, most of the current auditing protocols would inevitably become unable to work. In this paper, we focus on this new aspect of cloud storage auditing. Author investigate how to reduce the damage of the clients key exposure in cloud storage auditing, and give the first practical solution for this new problem setting. Formalize the definition and the security model of auditing protocol with key exposure resilience and propose such a protocol. In this design, employ the binary tree structure and the pre-order traversal technique to update the secret keys for the client. Authors also develop a novel authenticator construction to support the forward security and the property of block less very ability. The security proof and the performance analysis show that our proposed protocol is secure and efficient.

3) Paper Name: Enabling Cloud Storage Auditing With Verifiable Outsourcing of Key Updates

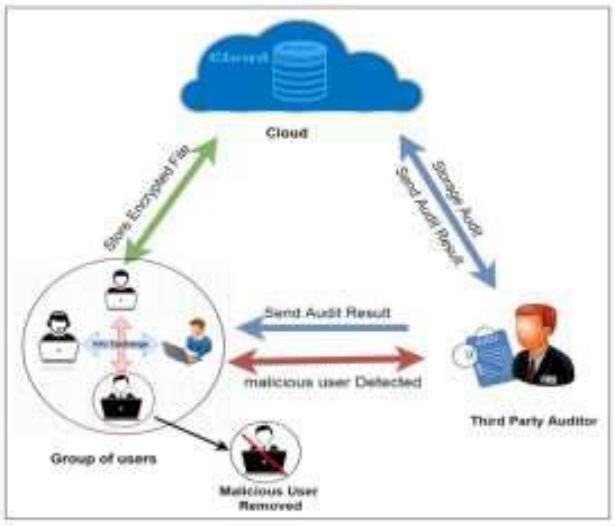
Author: Jia Yu, Kui Ren and Cong Wang

Description: Key-exposure resistance has always been an important issue for in-depth cyber defense in many security applications. Recently, how to deal with the key exposure problem in the settings of cloud storage auditing has been proposed and studied. To address the challenge, existing solutions all require the client to update his secret keys in every time period, which may inevitably bring in new local burdens to the client, especially those with limited computation resources, such as mobile phones. In this paper, focus on how to make the key updates as transparent as possible for the client and propose a new paradigm called cloud storage auditing with verifiable outsourcing of key updates. In this paradigm, key updates can be safely outsourced to some authorized party, and thus the key-update burden on the client will be kept minimal. In particular, leverage the third party auditor (TPA) in many existing public auditing designs, let it play the role of authorized party in our case, and make it in charge of both the storage auditing and the secure key updates for key-exposure resistance.

4) Paper Name: Cryptanalysis of simple three party key exchange protocol
Author Name: N.W. Lo, Kuo-Hui Yeh and Meng-Chih Chiang
Description: Three-party authenticated key exchange (3PAKE) protocol plays an indispensable role in history of the secure communication areas in which two clients can agree a robust session key based on a human memorable password. Current research community focuses on the issue of designing a simple 3PAKE (S-3PAKE) protocol which possesses both of robust system security and efficient computation complexity. In 2008, Chung and Ku pointed out that Lu and Caos S3PAKE scheme cannot resist three variants of the man- in the middle attack. The authors proposed a countermeasure to eliminate the identified weaknesses. Nevertheless, based on our security analysis, the S-3PAKE mechanism proposed by Chung and Ku is vulnerable to the undetectable on-line dictionary attack. In this paper, review Chung and Kus S-3PAKE protocol and analyze its robustness. For security enhancement, a modified S-3PAKE scheme is introduced to resist to the undetectable on-line dictionary attack

5) Paper Name: Provably authenticated group diffe-hellman key exchange
Author Name: H. Guo, Z. Li
Description: Group Diffe-Hellman protocols for Authenticated Key Exchange (AKE) are designed to provide a pool of players with a shared secret key which may later be used, for example, to achieve multicast message integrity. Over the years, several schemes have been offered. However, no formal treatment for this cryptographic problem has ever been suggested. this paper, present a security model for this problem and use it to precisely define AKE (with implicit authentication) as the fundamental goal, and the entity- authentication goal as well. Author then define in this model the execution of an authenticated group Diffe-Hellman scheme and prove its security.

Architecture Diagram:



Mathematical Model:
Input:
Large Bandwidth Network, movable device, sensor
Output:
Successful communication between two devices
System Description
1. Input: Set of outsourced data sets by corresponding data user.
2. Output: Securely data sharing with group participant and remove
malicious user from group through TPA.
3. System Used:
1. TPA for auditing on data and remove malecious users
Let S is the system, S= I, P, O,IS,OS,F,G,f1,f2
Where,I-Input,
P- procedure,
O- Output.

I-F,G
F- data les set of f1,f2,,fn
G- Group Users Query g1,g2,,qN
Procedure(P):
Where :
TPA=Third Party Auditor,
F=FaultTolerance
B=Set of block.
V=No of group participant.
ei = PublicKey
di = PrivateKey
H1,h2=HashFunction
Identify failure cases as F
F=fshare data to malicious user in group.g
Identify success as s.

s=share data in group and give private key to all group participant and remove malicious user from group.

Contribution : In this paper, we present an efficient and secure block design-based key agreement protocol by extending the structure of the SBIBD to support multiple participants, which enables multiple data owners to freely share the outsourced data with high security and efficiency. Note that the SBIBD is constructed as the group data sharing model to support group data sharing in cloud computing. Moreover, the protocol can provide authentication services and a fault tolerance property.

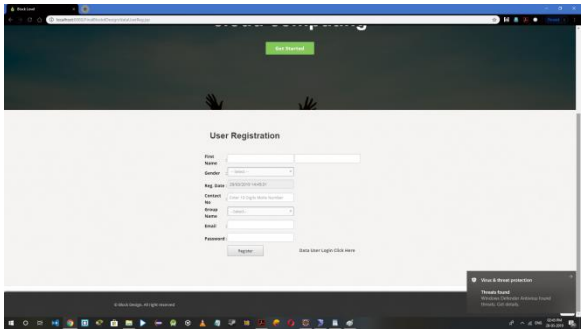
The main contributions of this paper are summarized as follows.

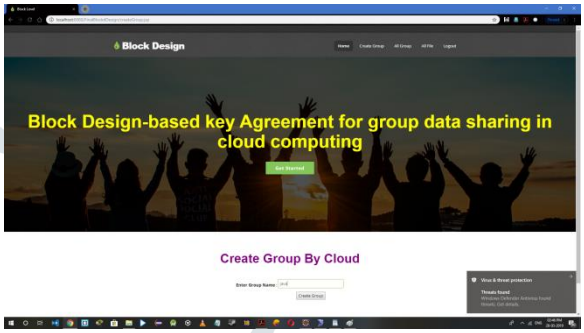
1. Model of group data sharing according to the structure of the SBIBD is constructed. In this paper, a group data sharing model is established based on the definition of the SBIBD, which can be used to determine the way of communication among the participants. Regarding mathematical descriptions of the structure of the SBIBD, general formulas for computing the common conference key for multiple participants are derived.
2. Fault detection and fault tolerance can be provided in the protocol. The presented protocol can perform fault detection to ensure that a common conference key is established among all participants without failure. Moreover, in the fault detection phase, a volunteer will be used to replace a malicious participant to support the fault tolerance property. The volunteer enables the protocol to resist different key attacks, which makes the group data sharing in cloud computing more secure.

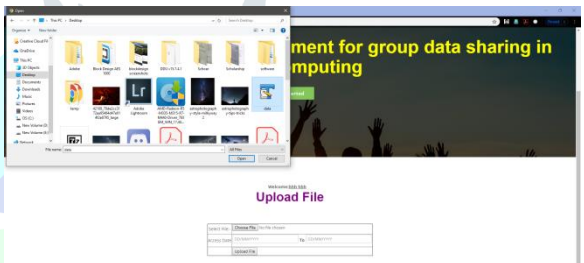
Problem Statement:

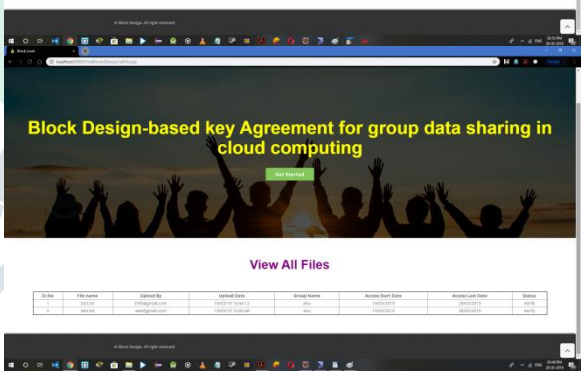
In block design based key agreement protocol system, we proposed a block design based key agreement protocol that supports multiple participants, which can flexibly extend the number of participants. Generate a common group key K for multiple participants to share securely data in group. Existing system operate only when all group participant are honest, but do not work when some group members are malicious and attempt to delay or destruct the group.

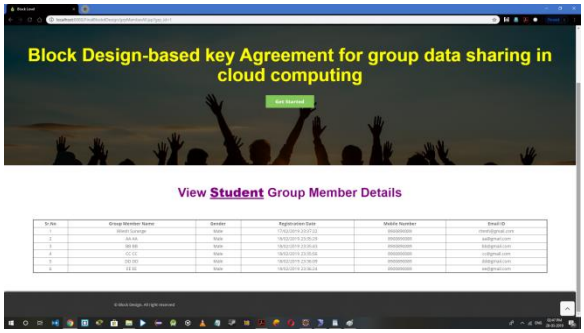
Screenshots:

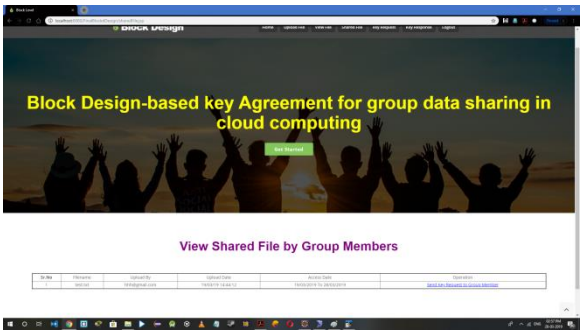












Conclusion:

As a development among the technology of the online and cryptography, cluster data sharing in cloud computing has spread out a greenhorn house of quality to portable computer networks. With the help of the conference key agreement protocol, the safety and efficiency of cluster data sharing in cloud computing are going to be greatly improved. Specifically, the outsourced information of the data the information the knowledge owners encrypted by the common conference key area unit protected from the attacks of adversaries. Compared with conference key distribution, the conference key agreement has qualities of higher safety and reliability. However, the conference key agreement asks for AN outsized quantity of information interaction among the system and extra process worth. To combat the problems among the conference key agreement, the SBIBD is employed among the protocol style. during this paper, we've got an inclination to gift a totally distinctive block design-based key agreement protocol that supports cluster data sharing in cloud computing. owing to the definition and additionally the mathematical descriptions of the structure of a (v; k + 1; 1)- style, multiple participants are going to be involved among the protocol and general formulas of the common conference key for participate in area unit derived. Moreover, the introduction of volunteers permits the given protocol to support the fault tolerance property, thereby making the protocol further sensible and secure. In our future work, we'd wish to extend our protocol to provide further properties (e.g., anonymity, traceability, and so on) to make it applicable for a range of environments.

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