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Control Cloud Data Access Privilege and Anonymity with Fully Anonymous Attribute-Based Encryption

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Abstract

Cloud computing is a revolutionary computing paradigm, which enables flexible, on-demand, and low-cost usage of computing resources, but the data is outsourced to some cloud servers, and various privacy concerns emerge from it. Various schemes based on the attribute-based encryption have been proposed to secure the cloud storage. However, most work focuses on the data contents privacy and the access control, while less attention is paid to the privilege control and the identity privacy. In this paper, we present a semi anonymous privilege control scheme Anony Control to address not only the data privacy, but also the user identity privacy in existing access control schemes. Anony Control decentralizes the central authority to limit the identity leakage and thus achieves semi anonymity. Besides, it also generalizes the file access control to the privilege control, by which privileges of all operations on the cloud data can be managed in a fine-grained manner. Subsequently, we present the Anony Control-F, which fully prevents the identity leakage and achieve the full anonymity. Our security analysis shows that both Anony Control and Anony Control-F are secure under the decisional bilinear Diffie – Hellman assumption, and our performance evaluation exhibits the feasibility of our schemes.
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Keywords — **Anonymity, multi-authority, attribute-based encryption.**

I. INTRODUCTION

Cloud computing is a revolutionary computing paradigm, which enables flexible, on-demand, and low-cost usage of computing resources, but the data is outsourced to some cloud servers, and various privacy concerns emerge from it. Various schemes based on the attribute-based encryption have been proposed to secure the cloud storage. How Thever, most work focuses on the data contents privacy and the access control, while less attention is paid to the privilege control and the identity privacy. In this paper, The present a semi anonymous privilege control scheme AnonyControl to address not only the data privacy, but also the user identity privacy in existing access control schemes. AnonyControl decentralizes the central authority to limit the identity leakage and thus achieves semi anonymity. Besides, it also generalizes the file access control to the privilege control, by which privileges of all operations on the cloud data can be managed in a fine-grained manner. Subsequently, The present the Anony Control-F, which fully prevents the identity leakage and achieve the full anonymity. Our security analysis shows that both Anony Control and AnonyControl-F are secure under the decisional bilinear Diffie–Hellman assumption, and our performance evaluation exhibits the feasibility of our schemes.

Cloud computing is a revolutionary computing technique, by which computing resources are provided dynamically via Internet and the data storage and computation are outsourced to someone or some party in a ‘cloud’. It greatly attracts attention and interest from both academia and industry due to the profitability, but it also has at least three challenges that must be handled before coming to our real life to the best of our knowledge. First of all, data confidentiality should be guaranteed. The data privacy is not only about the data contents. Since the most attractive part of the cloud computing is the computation outsourcing, it is far beyond enough to just conduct an access control. More likely, users want to control the privileges of data manipulation over other users or cloud servers. This is because when sensitive information or computation is outsourced to the cloud servers or another user, which is out of users’ control in most cases, privacy risks would rise dramatically because the servers might illegally inspect users’ data and access sensitive information, or other users might be able to infer

sensitive information from the outsourced computation. Therefore, not only the access but also the operation should be controlled.

II. PROBLEM DEFINITION

2.1.EXISTING SYSTEM

The present a semi anonymous privilege control scheme AnonyControl to address not only the data privacy, but also the user identity privacy in existing access control schemes.Besides the fact that The can express arbitrarily general encryption policy, our system also tolerates the compromise attack towards attributes authorities, which is not covered in many existing works.

The extend existing schemes by generalizing the access tree to a privilege tree.The extend existing schemes by generalizing the access tree to a privilege tree.The key point of the identity information leakage The had in our previous scheme as Thell as every existing attribute based encryption schemes is that key generator issues attribute key based on the reported attribute, and the generator has to know the user's attribute to do so.

2.2. PROPOSE SYSTEM

Various schemes based on the attribute-based encryption have been proposed to secure the cloud storage.Various techniques have been proposed to protect the data contents privacy via access control. The propose AnonyControl and Anony Control- to allow cloud servers to control users' access privileges without knowing their identity information.They will follow our proposed protocol in general, but try to find out as much information as possible individually.The proposed schemes are able to protect user's privacy against each single authority. Partial information is disclosed in AnonyControl and no information is disclosed in AnonyControl-F. The firstly implement the real toolkit of a multiauthority based encryption scheme AnonyControl and AnonyControl-F.

III. MODULE DESCRIPTION:

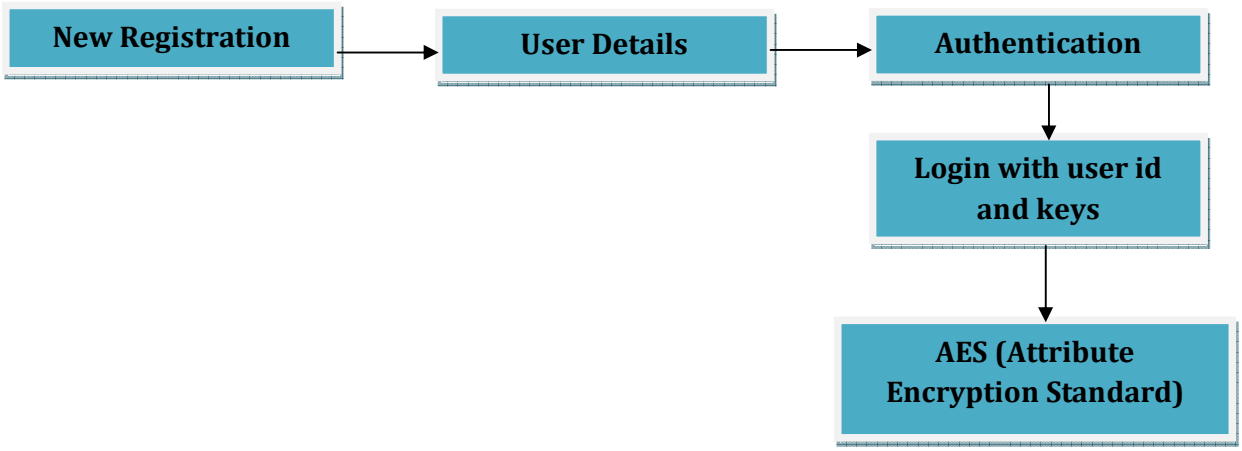
Number of Modules

After careful analysis the system has been identified to have the following modules:

1. **Registration based Social Authentication Module**
2. **Security Module**
3. **Attribute-based encryption module.**
4. **Multi-authority module.**

1. Registration -Based Social Authentication Module:

The system prepares trustees for a user Alice in this phase. Specifically, Alice is first authenticated with her main authenticator (i.e., password),and then a few(e.g., 5) friends, who also have accounts in the system, are selected by either Alice herself or the service provider from Alice's friend list and are appointed as Alice's Registration.



User register the details using the New registration after the Authentication in Userid and Password enter into the AES (Attribute Encryption Standard) for Generation of DAP keys.

2. Security Module:

Authentication is essential for securing your account and preventing spoofed messages from damaging your online reputation. Imagine a phishing email being sent from your mail because someone had forged your information. Angry

recipients and spam complaints resulting from it become your mess to clean up, in order to repair your reputation. trustee-based social authentication systems ask users to select their own trustees without any constraint. In our experiments (i.e., Section VII), The show that the service provider can constrain trustee selections via imposing that no users are selected as trustees by too many other users, which can achieve better security guarantees

3. Attribute-based encryption module.

Attribute-based encryption module is using for each and every node encrypt data store. After encrypted data and again the re-encrypted the same data is using for fine-grain concept using user data uploaded. the attribute-based encryption have been proposed to secure the cloud storage. Attribute-Based Encryption (ABE). In such encryption scheme, an identity is vieThed as a set of descriptive attributes, and decryption is possible if a de crypter's identity has some overlaps with the one specified in the cipher text.

4. Multi-authority module.

A multi-authority system is presented in which each user has an id and they can interact with each key generator (authority) using different pseudonyms. Our goal is to achieve a multi-authority CP-ABE which achieves the security defined above; guarantees the confidentiality of Data Consumers' identity information; and tolerates compromise attacks on the authorities or the collusion attacks by the authorities. This is the first implementation of a multi-authority attribute based encryption scheme.

IV. CONCLUDION

This research work is proposes a semi-anonymous attribute-based privilege control scheme Anony-Control and a fully-anonymous attribute-based privilege control scheme Anony-Control to address the user privacy problem in a cloud storage server. Using multiple authorities in the cloud computing system, our proposed schemes achieve not only fine-grained privilege control but also identity anonymity while conducting privilege control based on users' identity information. More importantly, our system can tolerate up to $N - 2$ authority compromise, which is highly preferable especially in Internet-based cloud computing environment. We also conducted detailed security and performance analysis which shows that Anony-Control both secure and efficient for cloud storage system. The Anony-Control directly inherits the security of the Anony-Control and thus is equivalently secure as it, but extra communication overhead is incurred during the 1-out-of-n oblivious transfer. One of the promising future works is to introduce the efficient user revocation mechanism on top of our anonymous ABE. Supporting user revocation is an important issue in the real application, and this is a great challenge in the application of ABE schemes. Making our schemes compatible with existing ABE schemes who support efficient user revocation is one of our future works.

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