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Hybrid Attribute Based Encryption and Customizable Authorization in Cloud Computing

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Document Sections

I. Introduction

II. Problem Statement

III. Proposed Work

IV. Proposed Algorithm

V. Experiment and Results

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Abstract: Most centralized systems allow data access to its cloud user if a cloud user has a certain set of satisfying attributes. Presently, one method to compete such policies is to use an authorized cloud server to maintain the user data and have access control over it. At times, when one of the servers keeping data is compromised, the security of the user data is compromised. For getting access control, maintaining data security and obtaining precise computing results, the data owners have to keep attribute-based security to encrypt the stored data. During the delegation of data on cloud, the cloud servers may be tampered by the counterfeit cipher-text. Furthermore, the authorized users may be cheated by retorting them that they are unauthorized. Largely the encryption control access attribute policies are complex. In this paper, we present Cipher-text Policy Attribute-Based Encryption for maintaining complex access control over encrypted data with verifiable customizable authorization. The proposed technique provides data confidentiality to the encrypted data even if the storage server is comprised. Moreover, our method is highly secured against collusion attacks. In advance, performance evaluation of the proposed system is elaborated with implementation of the same.

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 Contents

I. Introduction

Cloud computing (CC) is a service-oriented technology which facilitates user data requirements through the internet. The whole Internet can be termed as a cloud. Capital and execution costs can be less using cloud computing [1]. In the cloud computing environment, the cloud servers can validate the huge amount of data services such as DaaS, access control and outsource secure computation. In cloud computing, the cloud servers keep a large amount of shared data for data storage, which is accessed by authorized cloud user. As per cloud user's requirement, the cloud server could be used to handle and calculate large amount of data. Presently, the use of cloud computing is tremendous giving rise to problems such as confidentiality and delegation. Moreover, the present public key attribute methods allow a party to encrypt data to a specific user, but are unable to effectively handle more expressive types of encrypted access control policies demanding enhanced security solutions for cloud computing [2]. As applications are moving towards CC platforms, a CP-ABE with customizable authenticity are used to validate the data privacy and the validity of delegation on cloud servers. Cloud computing is a major service given by the cloud servers. This delegation process is performing the less computing power by the users [3]. This process gives their decryption process to the cloud server for reducing the computation time. Proposed system uses the k-multi linear Decisional Diffie-Hellman algorithm in order to validate the security to the encrypted data. This system takes only small computational and communication time [4] [5]. for bringing this the delegation process, customizable delegation is given to defend approved cloud users from human being. Attribute-based encryption (ABE) is a wider vision for public key encryption that gives cloud users to encrypt and decrypt messages based on cloud attributes [6] [7]. There are two types of ABE methods, which are: •

- Key-Policy Attribute-Based Encryption (KP-ABE)
-
- Cipher-text Policy Attribute Based Encryption (CP - ABE)

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