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Data Secure De-Duplication in Cloud Environment

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Abstract*:* *In the current area of information explosion, users' demand for data storage is increasing, and data on the cloud has become the first choice of users and enterprises. Cloud storage facilitates users to backup and share data, effectively reducing users' storage expenses. As the duplicate data of different users are stored multiple times, leading to a sudden decrease in storage utilization of cloud servers. Data stored in plaintext form can directly remove duplicate data, while cloud servers are semi-trusted and usually need to store data after encryption to protect user privacy. In this paper, we focus on how to achieve secure re-duplication and recover data in ciphertext for different users, and determine whether the indexes of public key searchable encryption and the matching relationship of trapdoor are equal in cipher text to achieve secure de-duplication. For the duplicate file, the data user's re-encryption key about the file is appended to the ciphertext chain table of the stored copy. The cloud server uses the re-encryption key to generate the specified transformed ciphertext, and the data user decrypts the transformed ciphertext by its private key to recover the file. The proposed scheme is secure and efficient through security analysis and experimental simulation analysis*.

Keywords: PEKS, Secure de-duplication, Proxy Re-encryption, Data recovery

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