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Data Integrity Verification of the Outsourced Big Data in the Cloud Environment: A Survey[#]

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Abstract: With the explosive growth of data and the rapid development of science technology, big data analysis has attracted increasing attention. Due to the restrictive performance of traditional devices, cloud computing emerges as a convenient storage and computing platform for big data analysis. Driven by benefits, cloud servers may intentionally delete or modify outsourced big data. Therefore, users need to make sure that the servers correctly store the outsourced big data prior to deploying the cloud computing applications in practice. To resolve the issue, many researchers have concentrated on enabling users to check the completeness of data with data integrity verification (DIV) techniques. We have therefore collated a summary of the existing literature, aiming to present a solid and stimulating review of current academic achievements for interested readers. Firstly, we present a fundamental introduction by defining seven major topics in order to offer a summary of the existing research domain for DIV study. Secondly, we classify the state-of-the-art DIV solutions into four categories, and then we parse each category based on dynamics, providing a clear and hierarchical classification of forthcoming DIV efforts. Thirdly, we discuss the principal topics and technical means utilized to equip DIV schemes with different requirements. Finally, we discuss the issues and challenges anticipated in future work, thus suggesting possible directions for follow-up research.

Keywords: Cloud Computing; Privacy Preserving; Data Integrity Verification; Public Auditing.

1 Introduction

With the rapid development of science and technology, big data have brought many conveniences to people's life [1, 2]. However, with the explosion in the volume of data, a traditional calculation model

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