

An Overview of Data Integrity Approaches for Managing Outsourced Data on Insecure Cloud Platforms

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Abstract: Cloud computing has become an expansive and rapidly expanding domain that significantly influences the advancement of various emerging technologies and applications, including but not limited to the internet of things, sensors, artificial intelligence, social networks, and business applications. The exponential growth of technology and applications has led to a substantial increase in data production, which is dynamically updated. The aforementioned dynamic data is stored on third-party service provider-provided cloud storage. The reliability of third-party cloud storage is questionable, and the user lacks authority regarding the data's possession or integrity. The primary concern is the integrity of the data, which is not being purged, altered, or obliterated on purpose or by accident. The researchers have introduced a number of protocols, including Provable Data Possession (PDP) techniques, which offer a probabilistic approach to verifying the integrity of data at the block level. In conjunction with PDP, the researchers have implemented various data structures to accommodate the dynamic nature of the data. For metadata generation and node rebalancing of the data structures, integrity verification schemes impose substantial computational and communicational burdens due to the dynamic character of the immense amounts of data.

Keywords: Provable data possession, cloud computing, data dynamics