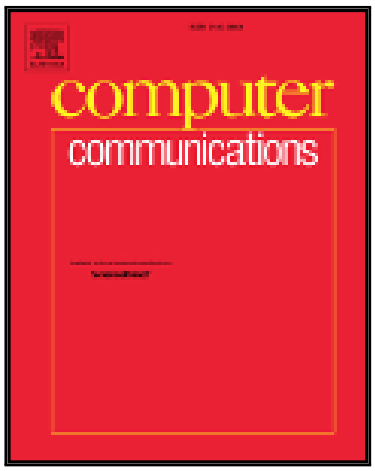

Data Security and Privacy preservation in Cloud Storage Environments based on Cryptographic Mechanisms

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PII: S0140-3664(17)30796-X
DOI: 10.1016/j.comcom.2017.07.006
Reference: COMCOM 5532

To appear in: *Computer Communications*

Received date: 3 April 2016
Revised date: 27 February 2017
Accepted date: 14 July 2017

Please cite this article as: Nesrine Kaaniche, Maryline Laurent, Data Security and Privacy preservation in Cloud Storage Environments based on Cryptographic Mechanisms, *Computer Communications* (2017), doi: 10.1016/j.comcom.2017.07.006

Data Security and Privacy preservation in Cloud Storage Environments based on Cryptographic Mechanisms

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Abstract

Recent technological advances have sparked the popularity and success of cloud. This new paradigm is gaining an expanding interest, since it provides cost efficient architectures that support the transmission, storage, and intensive computing of data. However, these promising storage services bring many challenging design issues, considerably due to both loss of data control and abstract nature of clouds. The objective of this survey is to provide a consistent view about both data security concerns and privacy issues that are faced by clients in cloud storage environments. This survey brings a critical comparative analysis of cryptographic defense mechanisms, and beyond this, it explores research directions and technology trends to address the protection of outsourced data in cloud infrastructures.

Key words: cloud data storage, security requirements, privacy, data confidentiality, data integrity, Proof of Data Possession, Proof of Retrievability, cryptographic cloud trends

1. Introduction

Nowadays, technological advances relieve an explosive growth of digital contents. The U.S. International Data Corporation (IDC) proclaims that the digital universe will grow 40 percent a year during the next decade, unleashing a new wave of opportunities for businesses and people around the world [1]. This proliferation of digital universe continues to rise the demand for new storage and network utilities, along with an increasing need for more cost-effective usage of storage capacities and network bandwidth for data transfer. As such, the use of remote storage systems is gaining an expanding interest, namely the *Cloud storage based services*, since they