

33. AUDITING CLOUD AS A CONSISTENCY SERVICE

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Cloud storage services have become commercially popular due to their overwhelming advantages. A cloud service provider (CSP) maintains multiple replicas for each piece of data on geographically distributed servers. A key problem of using the replication technique in clouds is that it is very expensive to achieve strong consistency on a worldwide. In this paper, we first present a novel consistency as a service (CaaS) model, which consists of a large data cloud and multiple small audit clouds. In the CaaS model, a data cloud is maintained by a CSP, and a group of users that constitute an audit cloud can verify whether the data cloud provides the promised level of consistency or not. We propose a two-level auditing architecture, which only requires a loosely synchronized clock in the audit cloud. Finally, we devise a heuristic auditing strategy (HAS) to reveal as many violations as possible. Extensive experiments were performed using a combination of simulations and a real cloud deployment to validate HAS.

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