

Dissertation press release

22.11.2020

The dilemma of encrypted data sharing

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| Title of the dissertation | Game Theoretic Analysis on Encrypted Data Deduplication in Cloud |
| Contents of the dissertation | <p>The widespread usage of cloud storage allows the same data to be stored multiple times either intentionally or unintentionally in cloud. For saving storage, an intuitive solution is to remove duplicated data by only storing one copy. User concerns about security and privacy lead them to store sensitive data in an encrypted form. Technical solutions that combine existing encrypted data deduplication schemes with flexible data access control have been proposed. They solve the difficulty of sharing encrypted data with deduplication. Whether these delicately designed schemes can be deployed in practical scenarios remains an unsolved problem.</p> <p>To explore whether selfish and profit-driven stakeholders in encrypted data deduplication schemes will behave actively and cooperatively, this dissertation employs game theory as an approach to analyze the behaviors of stakeholders from an economic perspective. Furthermore, incentive mechanisms that are suitable for different application scenarios are proposed for motivating the stakeholders to behave expectedly.</p> <p>This investigation fills in the gaps and overcomes the deficiencies of existing literature in a theoretical and comprehensive way. As a result of the study, the deduplication schemes with different data access control are accepted by a significant proportion of stakeholders and the incentive mechanisms successfully suppress the non-cooperative behaviors of stakeholders. The methods can be easily adapted to diverse deduplication schemes and can be combined with social networks and recommendation systems.</p> |
| Field of the dissertation | Networking technology |
| Doctoral candidate | Xueqin Liang |
| Time of the defence | 03.12.2020 time 17:00 |
| Place of the defence | Online. Link to the Zoom event: https://aalto.zoom.us/j/62154947686 |
| Opponent | Professor Stephen S. Yau, Arizona State University, USA |
| Custos | Professor Raimo Kantola, Aalto University School of Electrical Engineering, Department of Communications and Networking |
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