SaTC: CORE: Small: Secure Cloud Storage Verification Methods

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Challenge:

- Verify the integrity and reliability of data stored at cloud storage providers (CSPs) while allowing the efficient recovery from data loss
- Verify storage redundancy
- Verify physical storage node redundancy

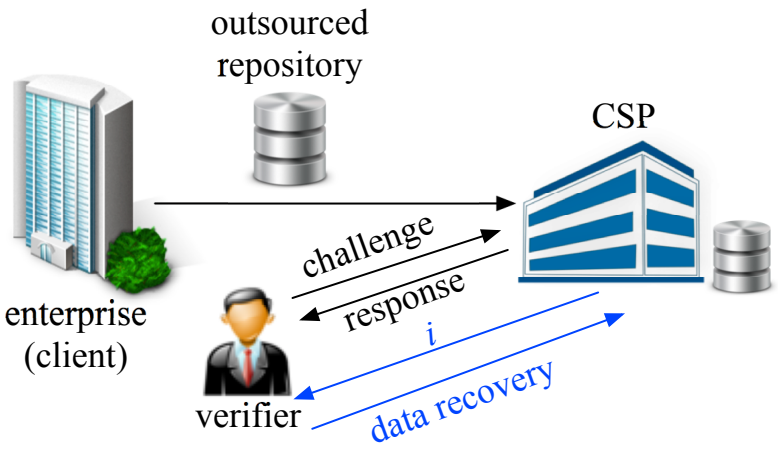

Fig. 1: Auditing storage redundancy for an outsourced repository while allowing recovery

Solution:

- Construct Proofs of Reliability (PoRLs)
- PoRLs allow for storage integrity verification and efficient file repair
- Proofs of physical storage reliability verify the use of multiple storage devices

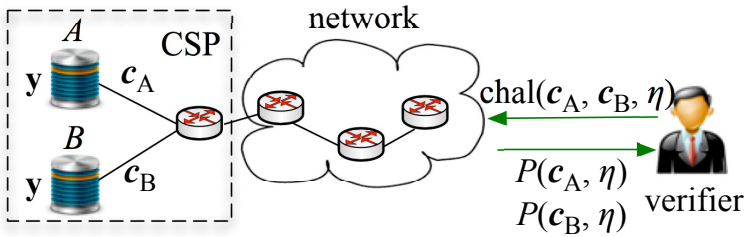

Fig. 2: Challenge-response for verifying physical storage node redundancy

Scientific Impact:

- Construct Proofs of Reliability (PoRLs)
- PoRLs allow for storage integrity verification and efficient file repair
- Proofs of of physical storage reliability verify the use of multiple storage devices

Broader Impact and Broader Participation:

- Research results have been integrated to two graduate courses and one undergraduate course
- The project has partially supported three female PhD students
- PIs have promoted research outcomes in outreach events in UA STEM initiatives and the WISE program

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