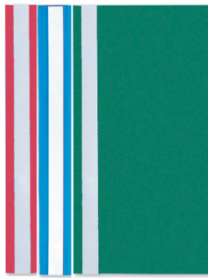
Official Arbitration for Cloud Storage

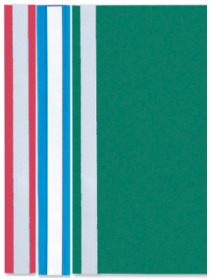
Alptekin Küpçü

KOÇ UNIVERSITY

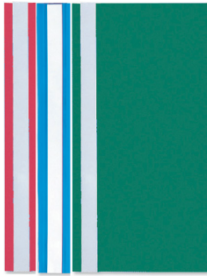
Cloud Storage



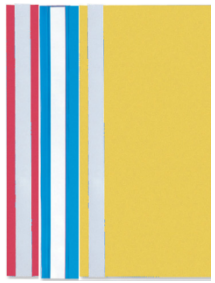
Cloud Storage



Cloud Storage

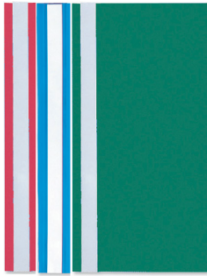


Untrusted Storage



Untrusted Storage

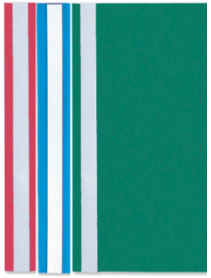
Provable Storage



Provable Storage

CHALLENGE

PROOF



Provable Storage

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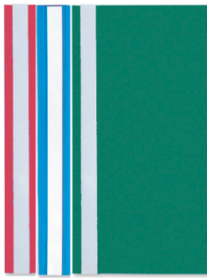
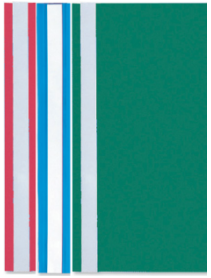


Dynamic Provable Storage

UPDATE

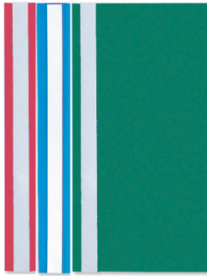
PROOF



Problem

CHALLENGE

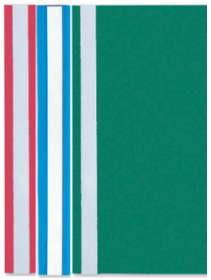
PROOF



Public Verifiability

CHALLENGE

PROOF



Public Verifiability

CHALLENGE

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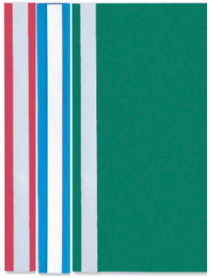
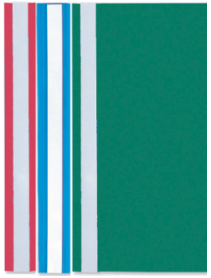
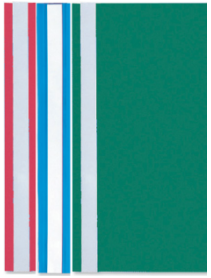


Arbitratable Provable Storage



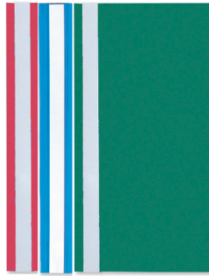
Arbitratable Provable Storage



Official Arbitration

CHALLENGE

PROOF



Official Arbitration

CHALLENGE

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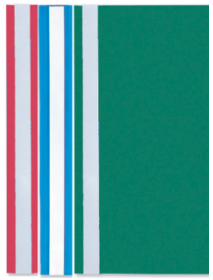

Official Arbitration

CHALLENGE

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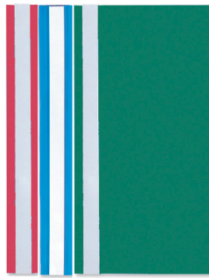
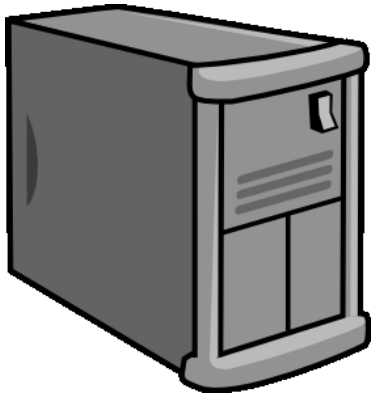
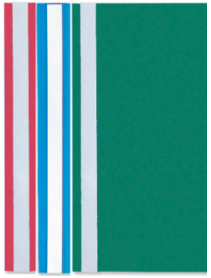


Automated Official Arbitration

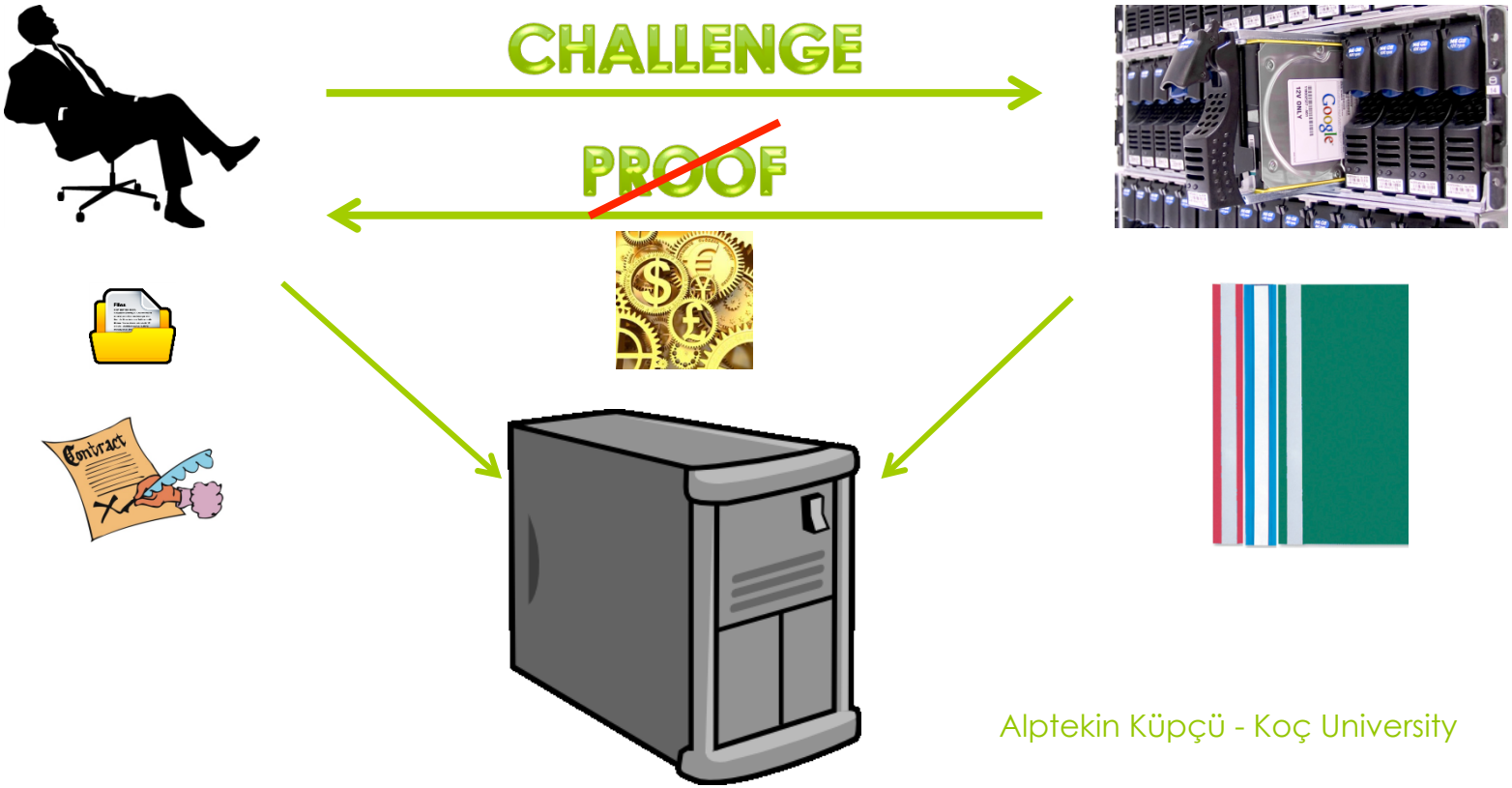
CHALLENGE

PROOF





Automated Warranty



Performance

		Rsync/Tcl/ Samba
Repo	# of commits	~25000
Naive method	Total Network Overhead	610 MB
	Total Computation Overhead	7 hours
Our novel method	Total Network Overhead	2 MB
	Total Computation Overhead	51 seconds
	Network Overhead per Commit	80 bytes
	Computation Overhead per Commit (client + server total)	2 ms

Contributions

- Official Arbitration
  - Not public verifiability
  - Judge can just be a computer
  - Payments can be automated
- 2-3 orders of magnitude efficiency gains
  - Only 80 bytes and 2 ms overhead

Thank You

- Check eprint for full paper (soon)

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