Cloud Auditing and Security

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Cloud Computing

- Virtual IT Infrastructure
- Enabling access and sharing of computing resources
- Fast provision and minimal management
- Cost saving and IT agility
Deployment Models

- Private cloud
- Public cloud
- Hybrid cloud
Cloud Auditor

“A party that can conduct independent assessment of cloud services, information system operations, performance, and security of the cloud implementation.” (NIST)

- Security auditing
- Verification of compliance
- Privacy impact auditing
The Cloud is “Inevitable”
**Adopt a Cloud**

- More than 600 U.S. government agencies use **Cloud Services**

- IT spending in the U.S. reached $8 billion in 2013 as leaked by Snowden

- CIA spent $600M and DoD is investing in **Commercial Cloud solutions to Store restricted military data**
But...

Apple

Target

Amazon

Google

Walmart

Home Depot

Fidelity

JP Morgan Chase

E*Trade
But...

- Side Channels
- Data Leakage, Loss, and Manipulation
- Account Hijacking
RESEARCH @ SAPIENZA

- Develop cloud audit technical tools to give control back to the end-users
- Provide data integrity and operate on encrypted data
- Cloud auditing made easy
Current Solutions

- Hard Isolation... but How?

- Data Authentication... where's my copy?

- Data Encryption... great!... But then What?

- Strong PKI... Identity verification... really?
Our Solutions (1)

- Provable Data Possession
- Effective even when No Local Copy is available
- Auditing of Private Data
Our Solutions (2)

- Searchable Encryption
- Access Control and Delegation
- Verifiable Computations
Our Solutions (3)

- Private Cloud
- Safe Key Management
- Sharing is Safe
Conclusions

- The Cloud is Inevitable
- Adopt a Cloud but Rely Upon the Experts
- CIS Sapienza provides Top-notch security solutions and services
- Cloud Auditing as a Business Opportunity
Thank you!