

Critical view on cloud computing

Michael Mardaus Julian F. Rost Sebastian Müller
Nils Döring

December 12, 2013

Gain

Cloud-Owners

Cloud-Users

Governments

Challenges

Performance

Accessibility

Strategic

Modifiability

Customer-Relationship

Risks

[Privacy](#)

Integrity

Reachability

Security

Social

Paper

Gains for different groups

Winner and Prices

Who is gaining and how?

Gains for different groups

Cloud-Owners

Gain

Cloud-Owners

Cloud-Users

Governments

Challenges

Performance

Accessibility

Strategic

Modifiability

Customer-
Relationship

Risks

Privacy

Integrity

Reachability

Security

Social

Paper

- higher utilisation of the existing computing power
- lower average costs for bigger systems
- additional income for companies from other sectors

Gains for different groups

Cloud-Users

Gain

Cloud-Owners

Cloud-Users

Governments

Challenges

Performance

Accessibility

Strategic

Modifiability

Customer-
Relationship

Risks

Privacy

Integrity

Reachability

Security

Social

Paper

- easier access to computing ressources
- "scalable" ressources

Gains for different groups

Governments

Gain

Cloud-Owners

Cloud-Users

Governments

Challenges

Performance

Accessibility

Strategic

Modifiability

Customer-
Relationship

Risks

Privacy

Integrity

Reachability

Security

Social

Paper

- means for censorship and prosecution (Youtube and Pakistan, USA-Patriot-Act, "Great Firewall of China", BKA-"Stop-Signs")

Challenges of using clouds

Obstacles and hurdles

What are we up to, if we consider to use a cloud-service?

Gain

Cloud-Owners
Cloud-Users
Governments

Challenges

Performance
Accessibility
Strategic
Modifiability
Customer-
Relationship

Risks

Privacy
Integrity
Reachability
Security
Social

Paper

Performance challenges

Is it as fast as yesterday?

- varying performance in especially smaller and medium sized clouds load-changes have higher impact
- latency might cause trouble with timeouts

Accessibility/dependence challenges

Why can't I connect and when is it fixed?

- as data and service is outsourced, connection has to be high-available
- need for outage prevention and mitigation

Gain

Cloud-Owners
Cloud-Users
Governments

Challenges

Performance
Accessibility
Strategic
Modifiability
Customer-
Relationship

Risks

Privacy
Integrity
Reachability
Security
Social

Paper

Strategic challenges

How much do you want to pay for what?

- low-cost solution vs. better or more secure solutions (aka. Finance Dept. vs. IT Dept.)
- outsourcing of know-how
- lock-in might be more expensive in the long run (raising prices)
- need for strict auditing
- more complex communication between cloud-provider and cloud-users

Gain

Cloud-Owners
Cloud-Users
Governments

Challenges

Performance
Accessibility
Strategic
Modifiability
Customer-
Relationship

Risks

Privacy
Integrity
Reachability
Security
Social

Paper

Modifiability challenges

Your code is perfect, now change it!

- given standardised protocols and software-versions
- monopolisation of standards
- scalability is limited by the architecture of the cloud
- long-term SLAs might slow down developement

Gain

Cloud-Owners
Cloud-Users
Governments

Challenges

Performance
Accessibility
Strategic
Modifiability
Customer-
Relationship

Risks

Privacy
Integrity
Reachability
Security
Social

Paper

Customer-Relationship challenges

What to tell on press-conferences?

- is the company allowed to store customers data in the cloud?
- are customers expecting the data to be stored inhouse?

Risks for all participants

What can go wrong, will go wrong

Gain

Cloud-Owners

Cloud-Users

Governments

Challenges

Performance

Accessibility

Strategic

Modifiability

Customer-Relationship

Risks

[Privacy](#)

Integrity

Reachability

Security

Social

Paper

Which problems and dangers might occur?

Privacy risks

My data, your data, our data!

- need for complete encryption to protect privacy, slows down computation
- laws for privacy regulation might hinder services
- national security regulations can prevent privacy
- other cloud-users share the same hardware, thus it is easier to get access to protected data
- cloud-owners can access your data nearby as they wish

Gain

Cloud-Owners
Cloud-Users
Governments

Challenges

Performance
Accessibility
Strategic
Modifiability
Customer-
Relationship

Risks

Privacy
Integrity
Reachability
Security
Social

Paper

Integrity risks

I am sure, I've checked that!

- since the processes are virtualised or layered, there are no guaranties for integrity of data or procedures
- possible loss of data, if the cloud-provider does not take care

Reachability risks

Why is the internet offline?

- a cloud-service without connectivity is useless
- lower bandwidth inhibits effective use of services
- permanent connection is necessary, each breakdown hurts public-relations

Security risks

Once my machine, now your machine!

- each security breach affects the whole cloud
- broken and taken over cloud-users could infect or slow-down the whole cloud
- standardised hardware and software-stacks are preferred targets

Social risks

Some are more equal than others!

Gain

Cloud-Owners

Cloud-Users

Governments

Challenges

Performance

Accessibility

Strategic

Modifiability

Customer-
Relationship

Risks

Privacy

Integrity

Reachability

Security

Social

Paper

- cloud-computing leads to the centralising of the Internet
- regions without broadband-connectivity are excluded from cloud-usage
- monopolists push other companies out of the market
- computation-power concentrates on a few players
- know-how concentrates also on a few players

Paper

Where to look at

- Security and high availability in cloud computing environments - IBM (2011)
- Emerging Issues: Cloud Computing 1 of 5- South African Internet Governance (2011)
- Above the Clouds: A Berkeley View of Cloud Computing (2009)