Critical view on cloud computing

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Gains for different groups

Winner and Prices

Who is gaining and how?

Gains for different groups

Cloud-Owners

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

Gains for different groups

Cloud-Users

- easier access to computing resources
- "scalable" resources

Gains for different groups

Governments

- 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?

Performance challenges

Is it as fast as yesterday?

- varying performance - especially in 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 highly-available
- need for outage prevention and mitigation

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

Modifiability challenges

Your code is perfect, now change it!

- given standardized protocols and software-versions
- monopolization of standards
- scalability is limited by the architecture of the cloud
- long-term SLAs might slow down development

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?

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

Integrity risks

I am sure, I've checked that!

- since the processes are virtualized 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
- standardized hardware and software-stacks are preferred targets

Social risks

Some are more equal than others!

- cloud-computing leads to the centralizing 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)