
The future of cloud computing – Security in the cloud



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Motivation

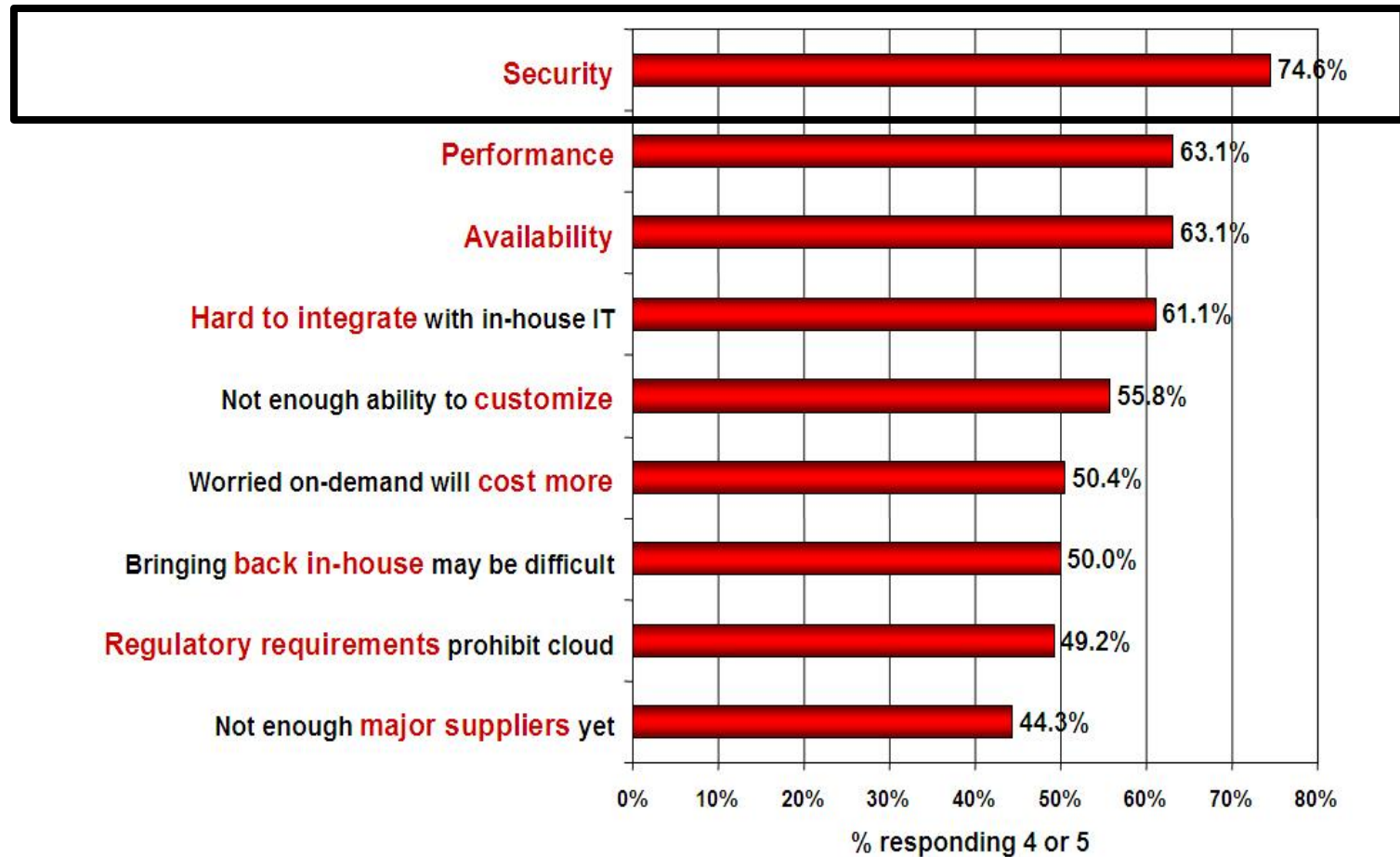
“The effect of the **growing dependence on cloud computing** is similar to that of our dependence on public transportation, particularly air transportation, which **forces us to trust organizations over which we have no control, limits what we can transport, and subjects us to rules and schedules** that wouldn't apply if we were flying our own planes. On the other hand, it is **so much more economical that we don't realistically have any alternative.**”

(Whitfield Diffie, Technology Review, 16.11.2009)

Quelle: <http://www.technologyreview.com/computing/23951/>

Challenges of Cloud Computing

Q: Rate the **challenges/issues** ascribed to the 'cloud'/on-demand model
(1=not significant, 5=very significant)



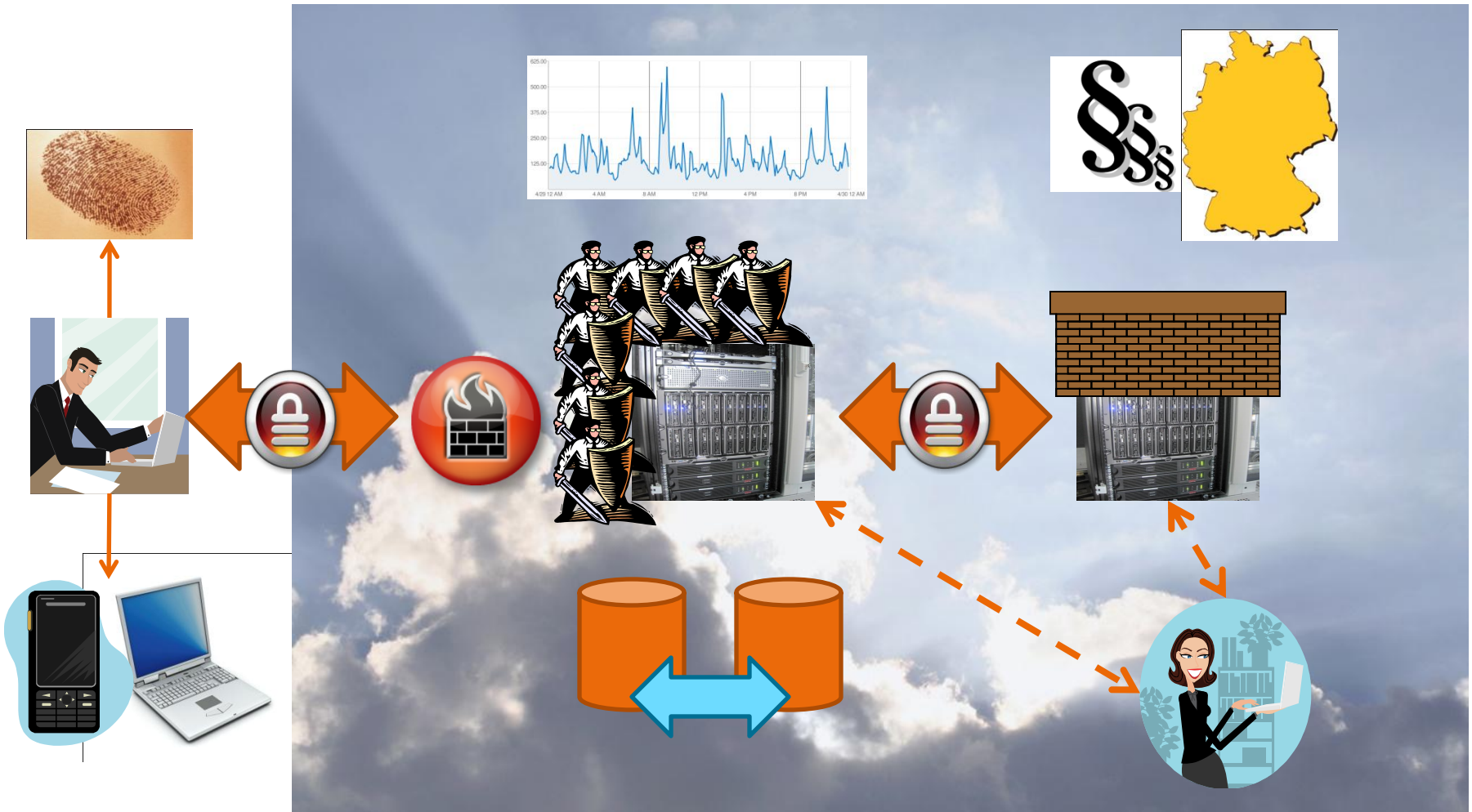
Source: IDC Enterprise Panel, August 2008 n=244

Top 7 Threats in Cloud Computing

- (1) Abuse of Cloud Computing Resources
- (2) Shared Technology Vulnerabilities
- (3) Data Loss or Leakage
- (4) Insecure Application Programmer Interface
- (5) Account, Service & Traffic Hijacking
- (6) Malicious Insiders
- (7) Unkown Risk Profile

Source: <http://www.cloudsecurityalliance.org/topthreats/csathreats.v1.0.pdf>

A consumer-oriented security tour using cloud services



The top ten dos and don'ts of cloud security

- (1) Use a holistic security concept
- (2) Integrate the services in an existing security concept
- (3) Build a relationship of trust between the cloud consumer and the cloud vendor
- (4) Protect the network infrastructure
- (5) Use innovative security solutions for cloud computing systems
- (6) Reuse basic services
- (7) Pay attention to lock-in effects
- (8) Request security certificates
- (9) Don't forgo security concepts for purely financial reasons
- (10) Use service level agreements

Fraunhofer SIT Cloud Computing Activities



■ Study on Cloud Computing Security

- Goal: Framework for cloud security risk assessment
- Taxonomy of cloud security aspects and cloud security checklists
- Available in English and German language, published Sept. 2009

■ Cloud Testlab

- Currently 22 servers, 15 TB storage array, 1 Gbit uplink
- Open source software stack
 - Ubuntu Enterprise Cloud, Eucalyptus, Open Nebula, ...
 - EC2/S3 interface compatibility
- Development platform for cloud security concepts, architectures and demonstrators
 - Tailored to customer needs



Summary

- Cloud-Computing: Great opportunities for enterprises and providers
 - Security, Privacy and Trust are still open issues: Show-Stopper?!
 - Solved Security Problems will be Cloud-Enablers!
- Major security challenges at consumers' side
 - End user device security
 - Identity and access management
- Cloud computing @ Fraunhofer SIT
 - SIT-study provides a framework for a systematic risk assessment
 - SIT-cloud test lab
 - Research on dedicated security technology e.g. to harden Cloud-platforms, -services

Thank you for your kind attention

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Sichere Services und Qualitätstests

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