Berlin Cloud-Based IT Infrastructures

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Focus on: Hardware Expenses

Vision:

Save the money…

Status quo:

High investments required for each new research group, employee, student, project, …

Focus on: Infrastructure

Vision:
Working with cost- and energy-efficient Thin Clients

Status quo:

Old devices, high power consumption, noise

Focus on: Operating System

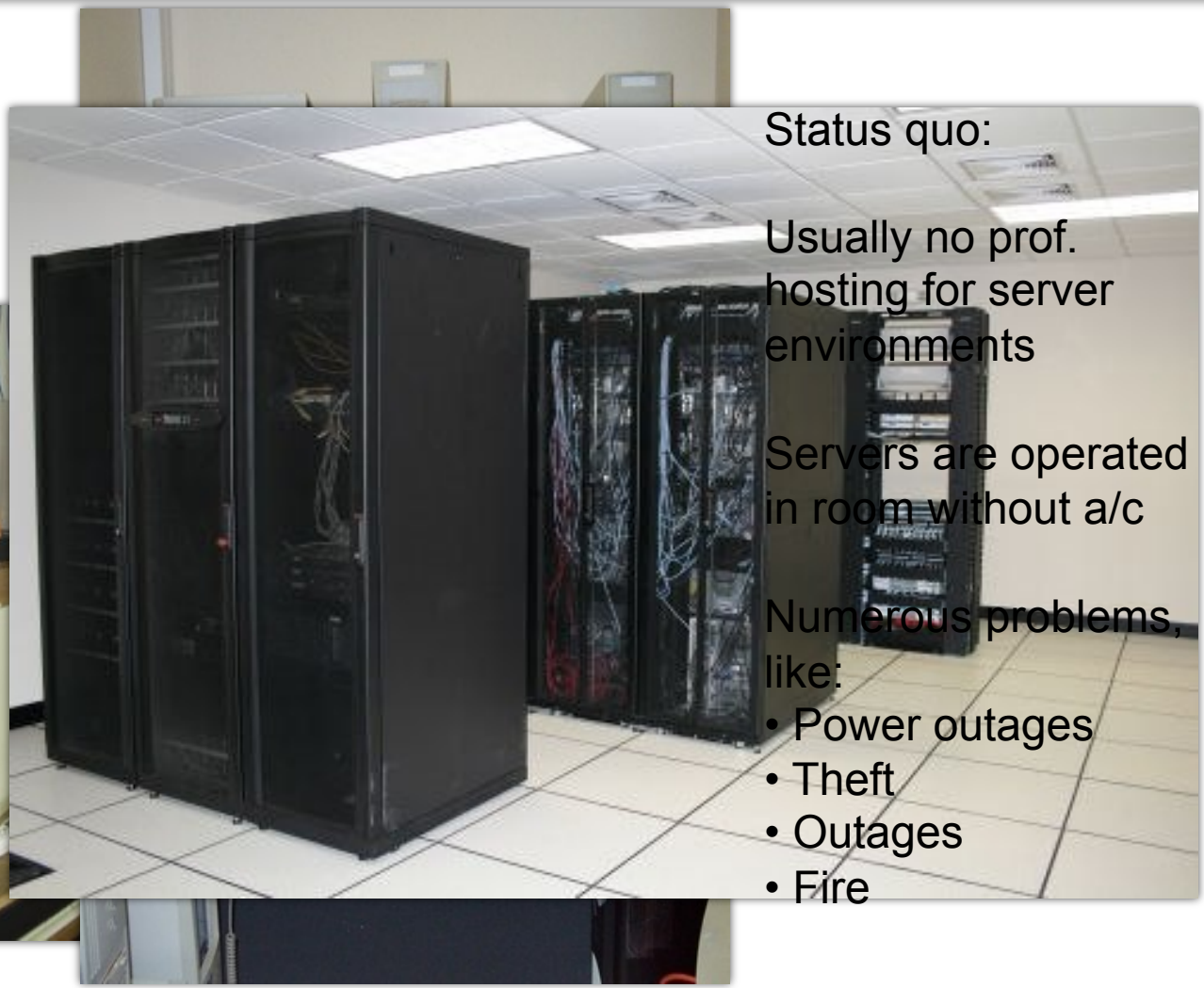
Focus on: Hosting Situation

Vision:

Professional hosting of hardware devices

Consolidation of servers

Dynamic assignment of resources to customers (e.g. research projects, student groups, …)



Status quo:

Usually no prof. hosting for server environments

Servers are operated in room without a/c

Numerous problems, like:

- Power outages
- Theft
- Outages
- Fire

The BCI Project

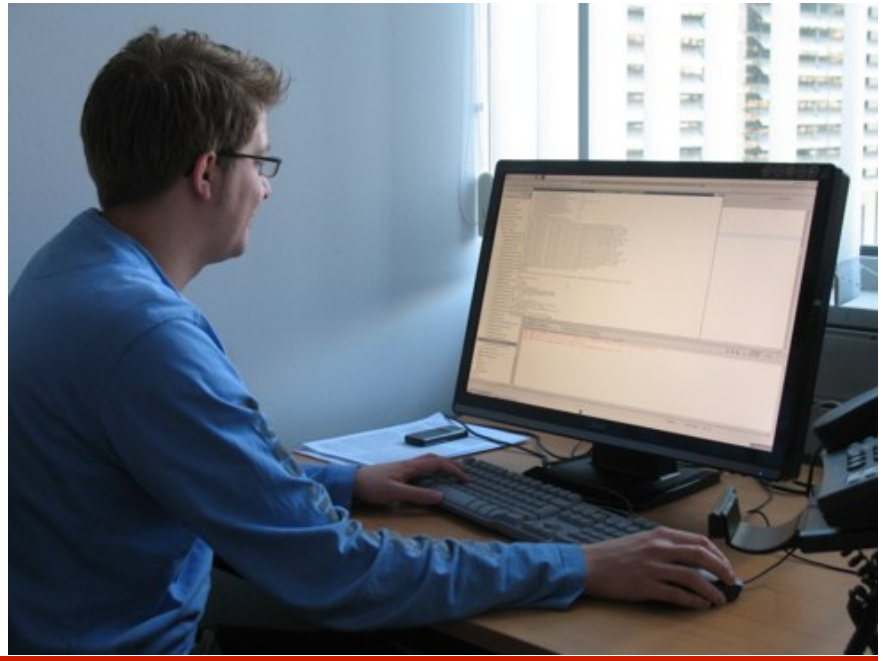
- BCI Project:
  „Berlin Cloud-based IT-Infrastructures“
  - Funded by EC in scope of EFRE initiative
  - Duration: 30 months (2009-2012)

- Objectives
  - Migration of physical infrastructures to cloud
  - Establishment as standard service for TUB
  - Collaboration with commercial partners

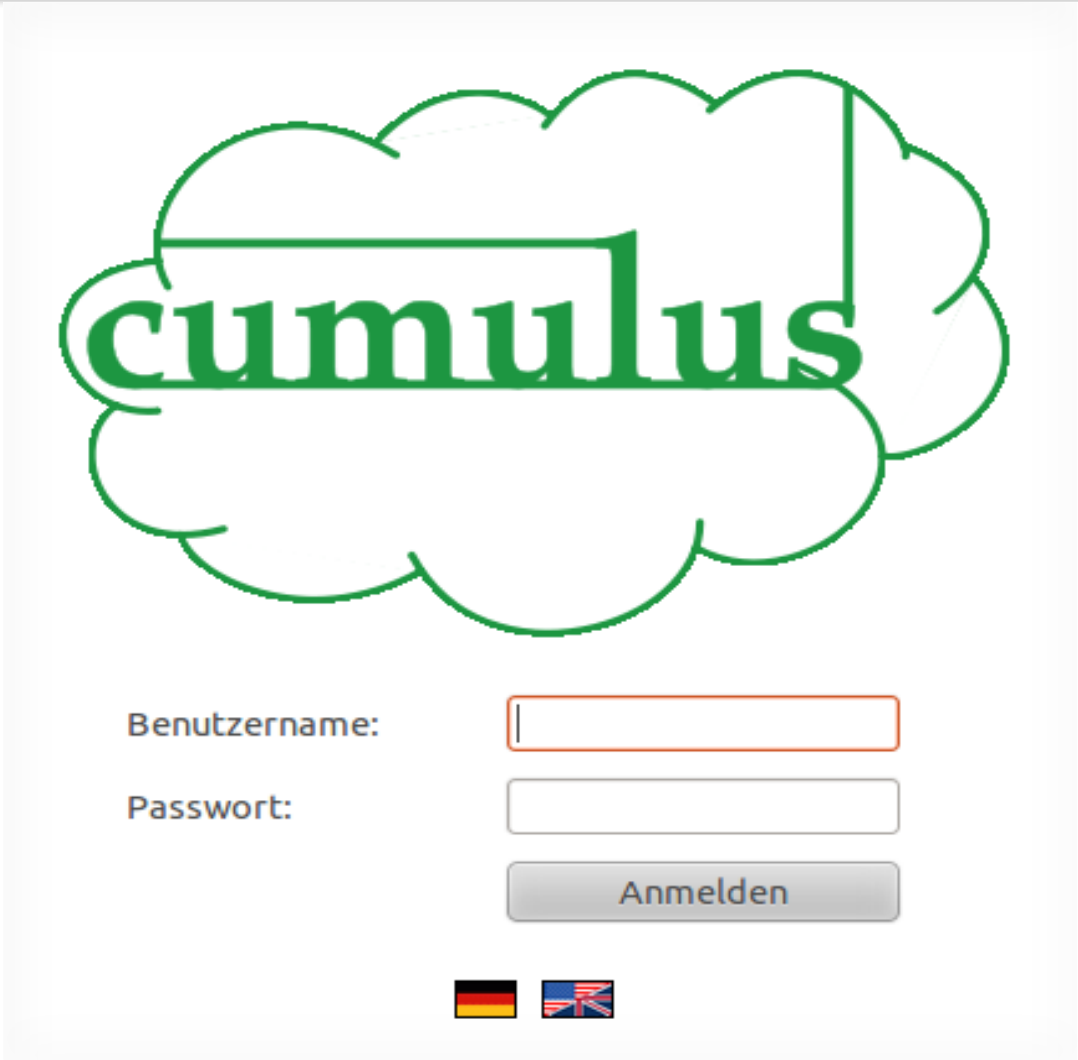
Standard Service at TUB

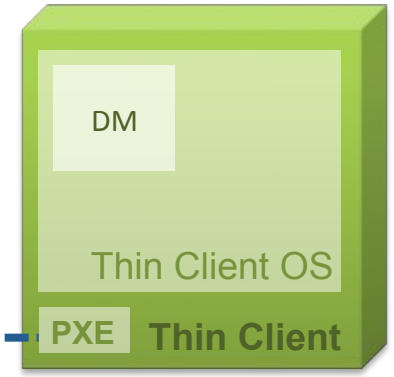
- TUB profile
  - 30.000 students, 7.000 researchers and staff members
  - 300 research areas
  - 10.000+ alumni

- Challenges for BCI
  - Integration in standard server environment at TUB
  - Hiding of all complexity
  - Security



BCI Architecture





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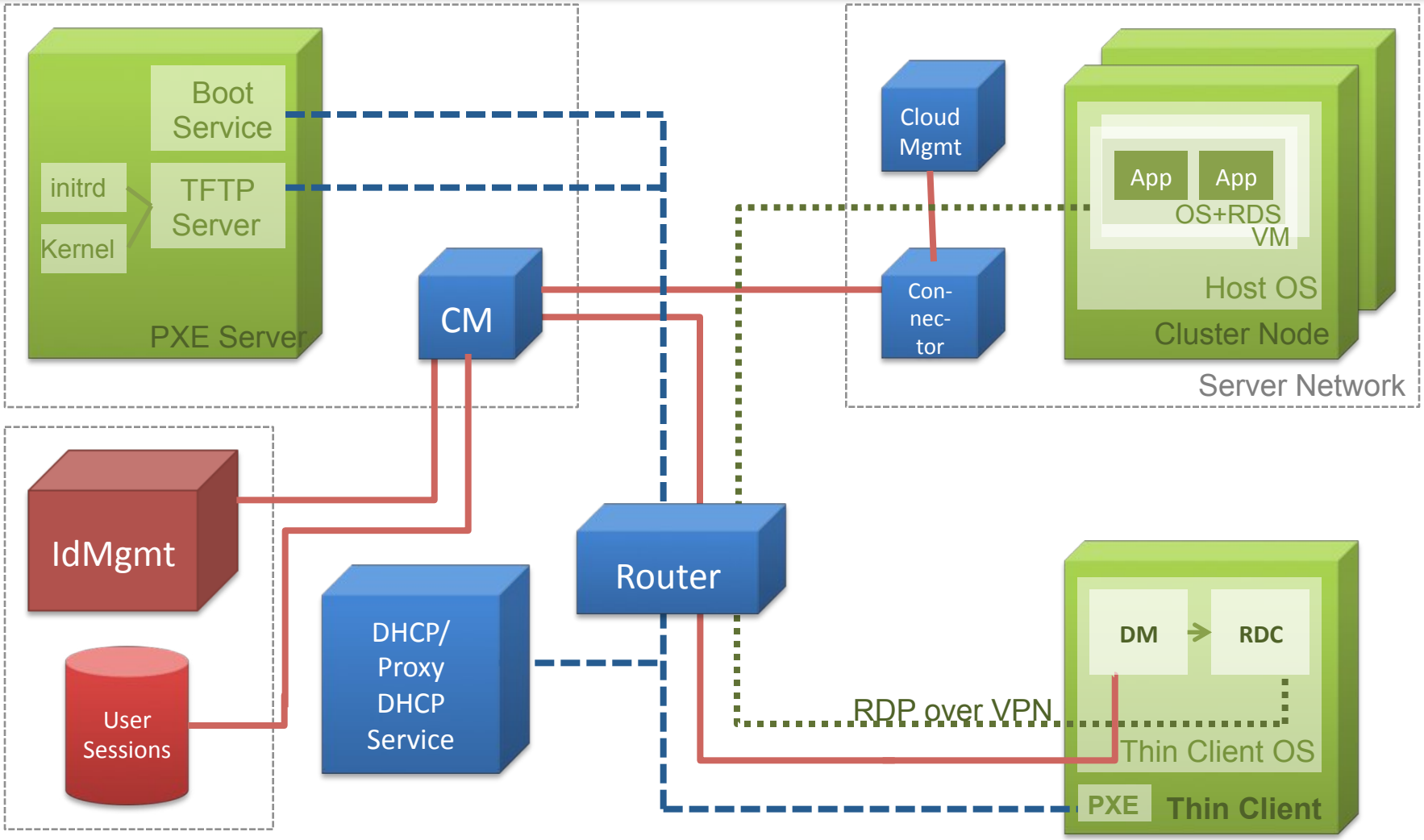

BCI Stacks

- Generic stack
  - Local user database
  - Connector to KVM
- TUB-specific stack
  - Accessing LDAP at TUB
  - RBAC via web services
  - Connector to Zimory
- Desktop remoting in both stacks
  - Support of VNC, RDP and x2go
  - Experimental support of SPICE

Roadmap

- Status at month 18 of 30
  - Hardware integrated @ TUB compute center
  - Connectors to Zimory, LDAP and RBAC working
  - Users from two research groups
    - Mainly p.hd. students
    - But also two secretaries and 1 student pool
- Open issues
  - Support of SPICE
  - Attacting additional user groups at TUB
  - Going open source
  - Collaboration with startup companies

BCI @ broader scope

- Public Cloud Infrastructure to provide
  - Easy-to-deploy IT environment for start-up centers
  - Services for schools and public administration

- Deployment of every-day IT infrastructure needed for start-up companies
  - On-demand instant deployment, Pay-as-you-go
  - Scalable, aligning resources to actual requirements
  - Focus on own business goals

Conclusion

- Migrating IT infrastructures into the Cloud
  - Reducing costs, providing on-demand environments
- BCI achieved initial goals
  - Hardware has been integrated
  - Software stack is operational
  - First users are working
- More information and success stories online:
  - http://bci.cit.tu-berlin.de (sorry, german only)
  - Feel free to contact me
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