

# Cloud Computing

## Data Center

- Serverhardware (CPU, RAM, Storage, Network)
- Top-of-Rack and End-of-Row Switches

## Virtualisierung

### Abstraction Layers

- Services: Web, E-Mail, ...
- OS
- Firmware (ROM)
- Hardware: CPU, Memory, NIC, Disk

### Hypervisors

- Typ 1 Hypervisor (bare Metal): KVM, Red Hat Enterprise Virtualization, Xen, Citrix XenServer, VMware ESXi, VMware vSphere, Microsoft Hyper-V
- Typ 2 Hypervisor (hosted): Virtualbox, VMware Workstation, Parallels, Virtual OC
- Cisco Nexus 1000v virtual switch

## Cloud Computing

**The NIST Definition of Cloud Computing** [\[download pdf\]](#)

### Essential Characteristics

- On-demand self-service
- Broad network access
- Resource pooling
- Rapid elasticity
- Measured service

### Service Models

- SaaS (Software as a Service): Google Docs, GMail, MS Office 365
- PaaS (Platform as a Service): AWS Elastic Beanstalk
- IaaS (Infrastructure as a Service): Amazon Web Services (aws), Microsoft Azure

### Deployment Models

- Private cloud: nur von einer Organisation genutzt
- Community cloud: von mehreren Organisationen gemeinsam genutzt
- Public cloud: von der Öffentlichkeit genutzt
- Hybrid cloud: Verbindung mehrerer Infrastrukturen