Database as a Service

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Motivation & Objectives

- Motivation
  - Databases are used in many applications
  - Databases serve for storing data in companies
  - Companies hire DB administrators and buy expensive hardware – there is another solution
  - Applications (DB) can be virtualized in the cloud

- Thesis' objectives
  - Survey existing services
  - Summarize their properties and compare them
  - Experimental evaluation of performance

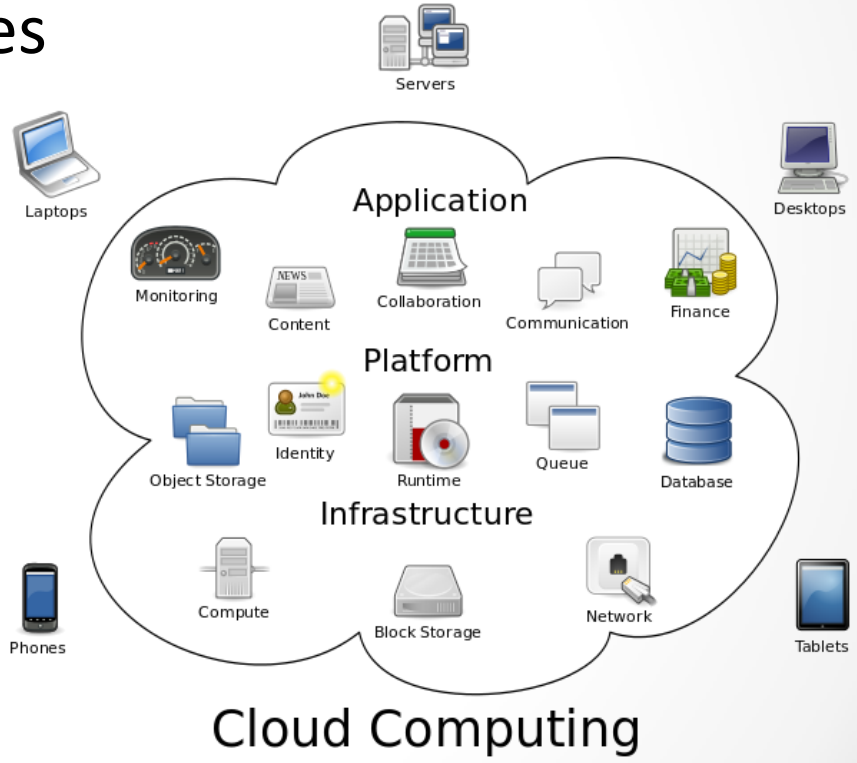
Outline

- Cloud computing
- Database as a Service
- Providers of Database as a Service

Cloud computing

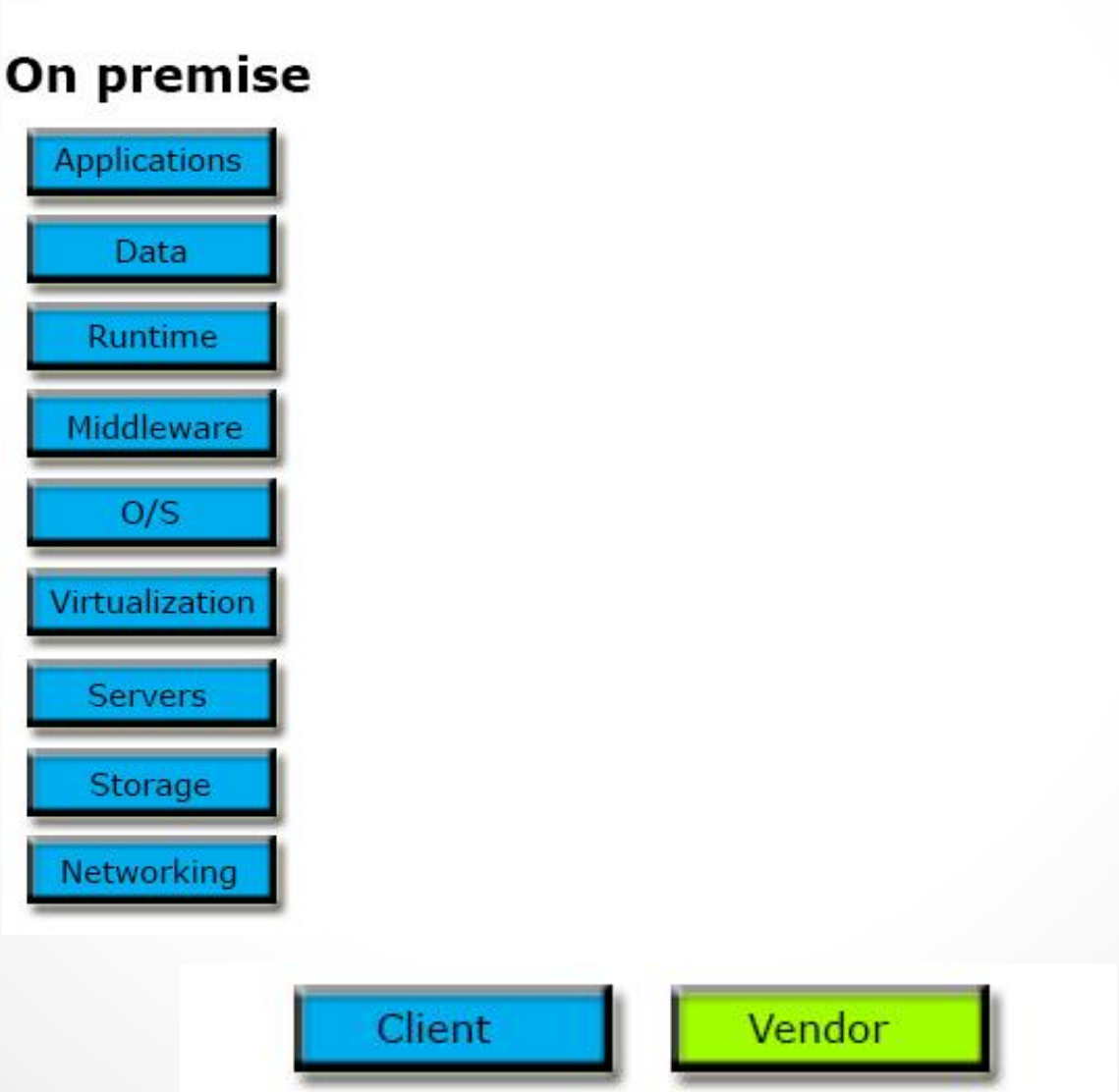
Cloud computing

- Email, photos
- Delivering hosted services
- Models:
  - Infrastructure as a Service
  - Platform as a Service
  - Software as a Service

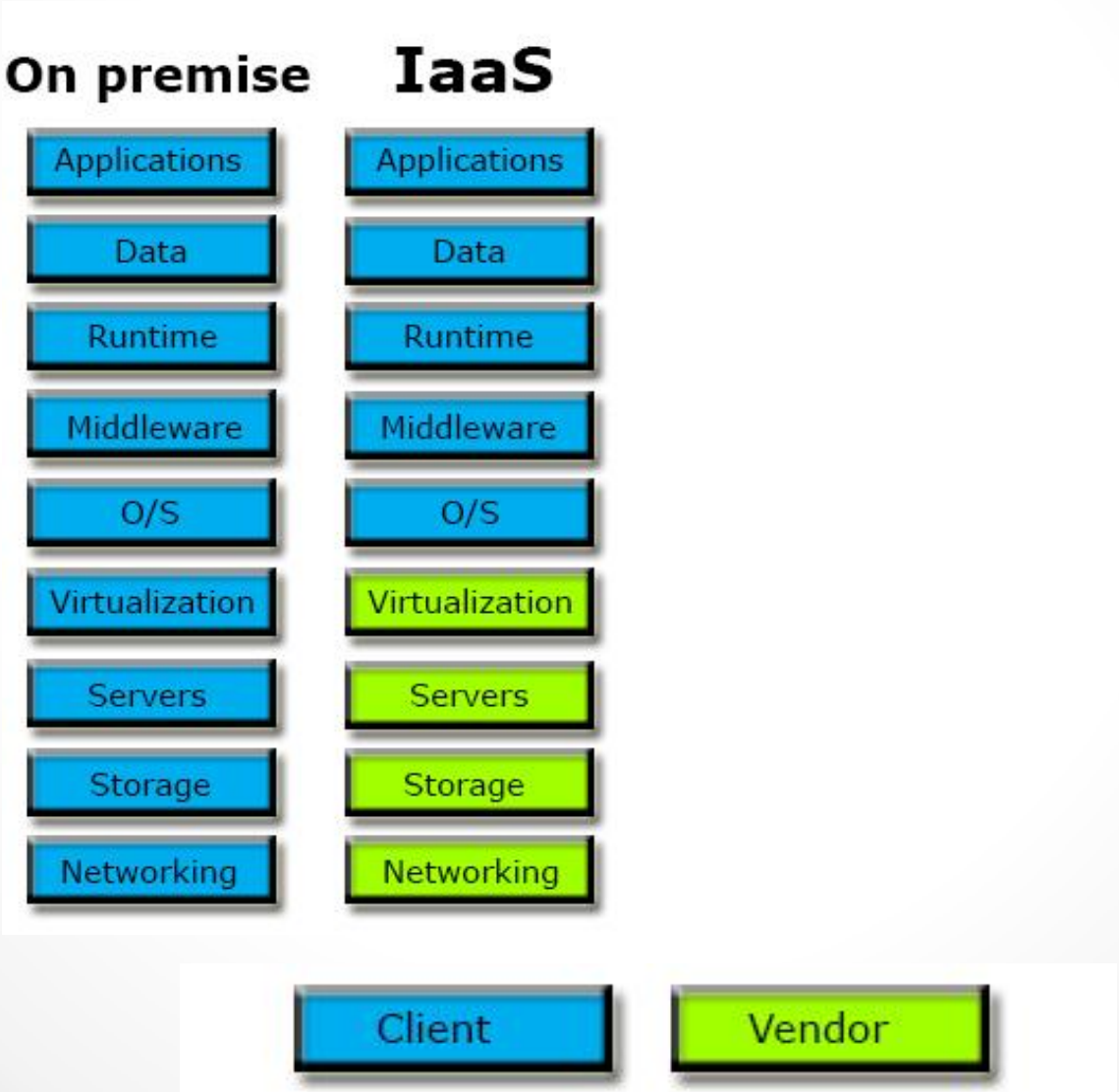


Source of the image: http://cs.wikipedia.org/wiki/Cloud_computing

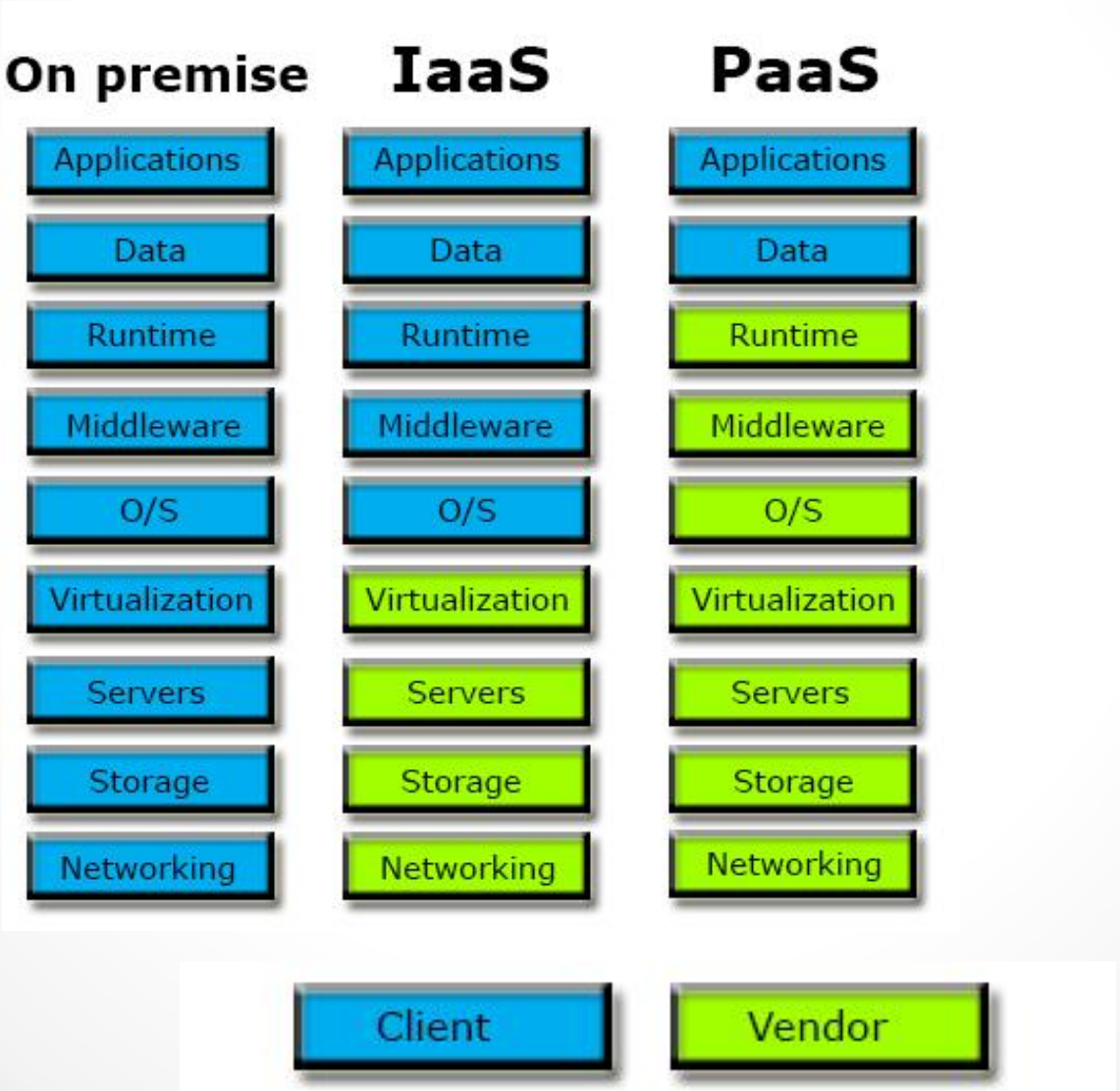
Cloud computing



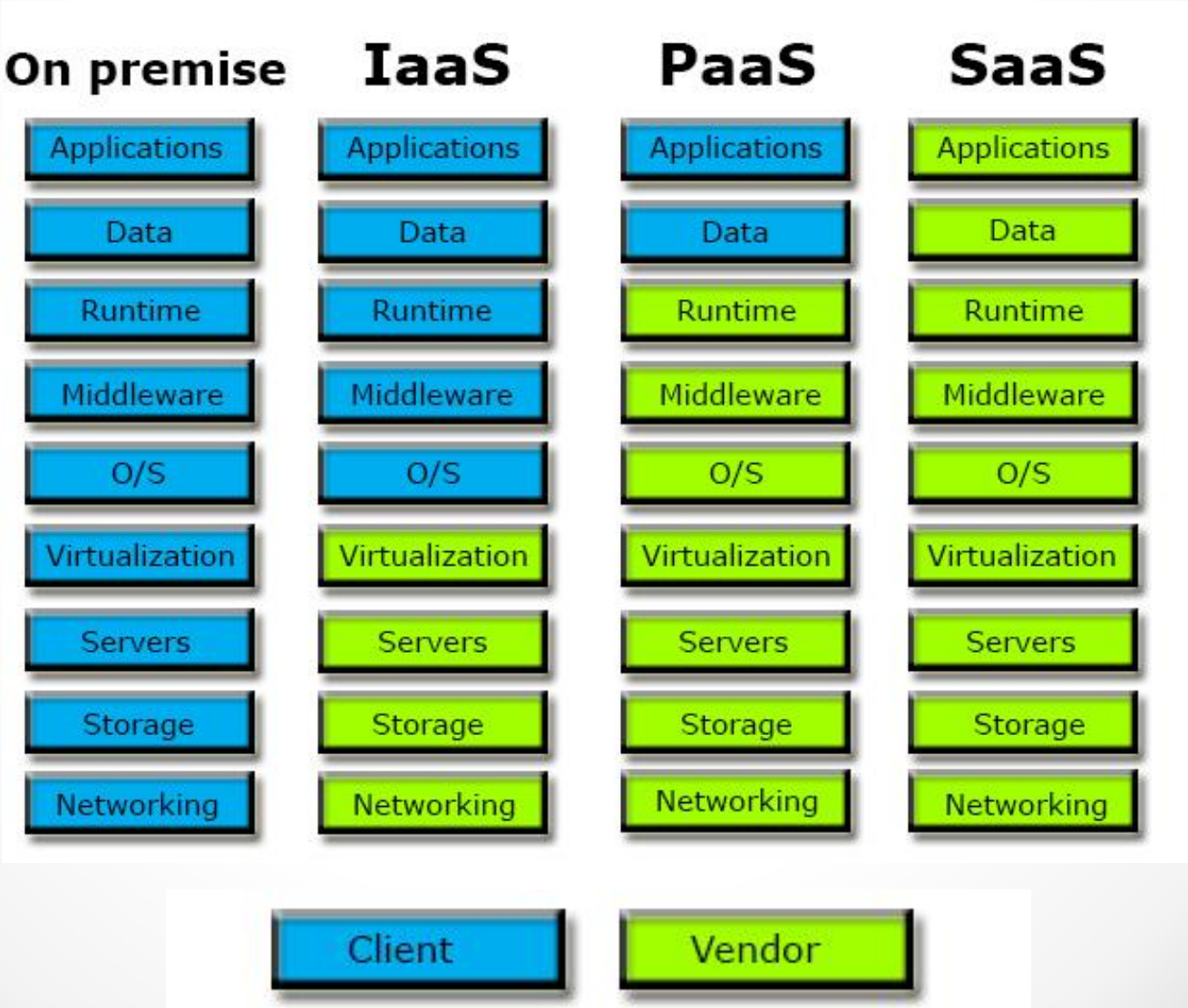
Cloud computing



Cloud computing



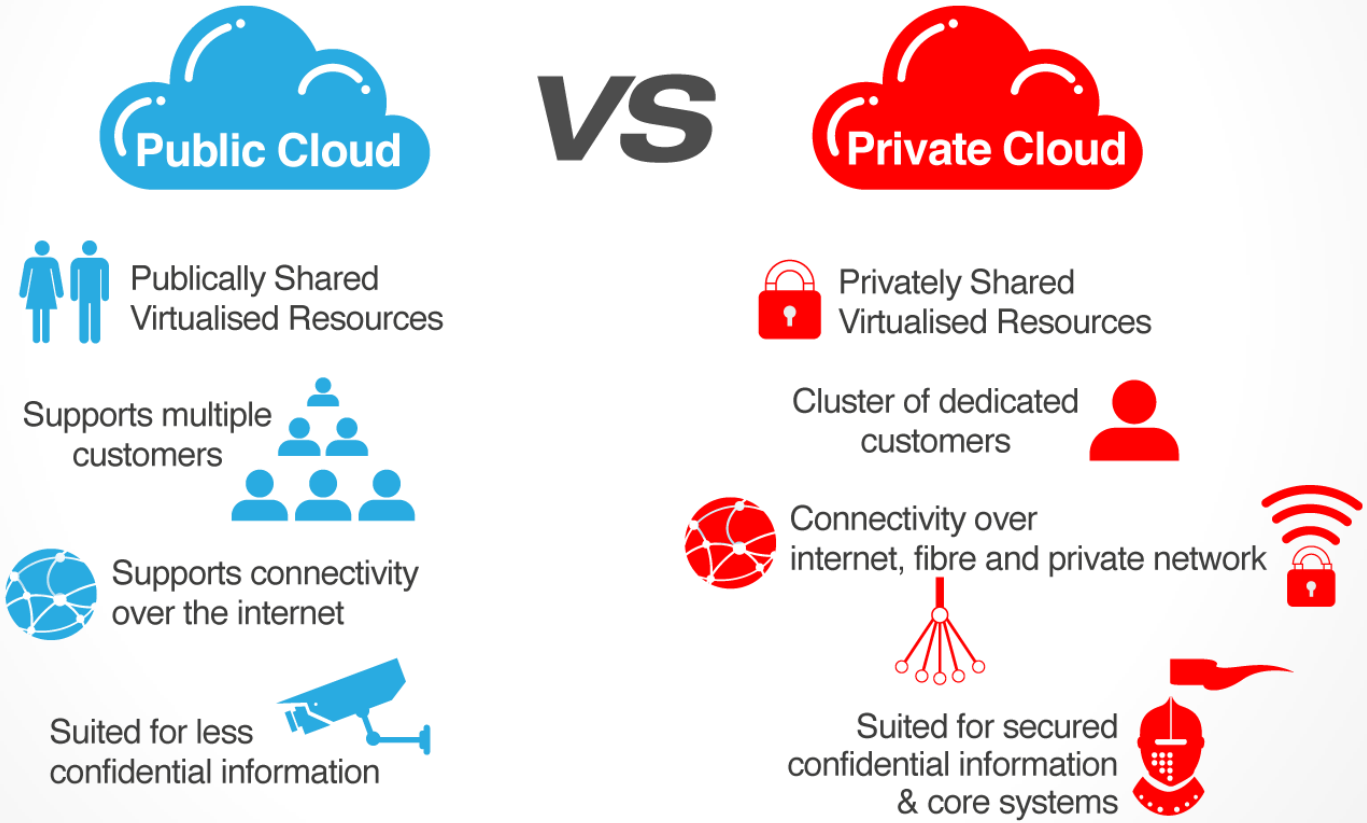
Cloud computing



Deployment models

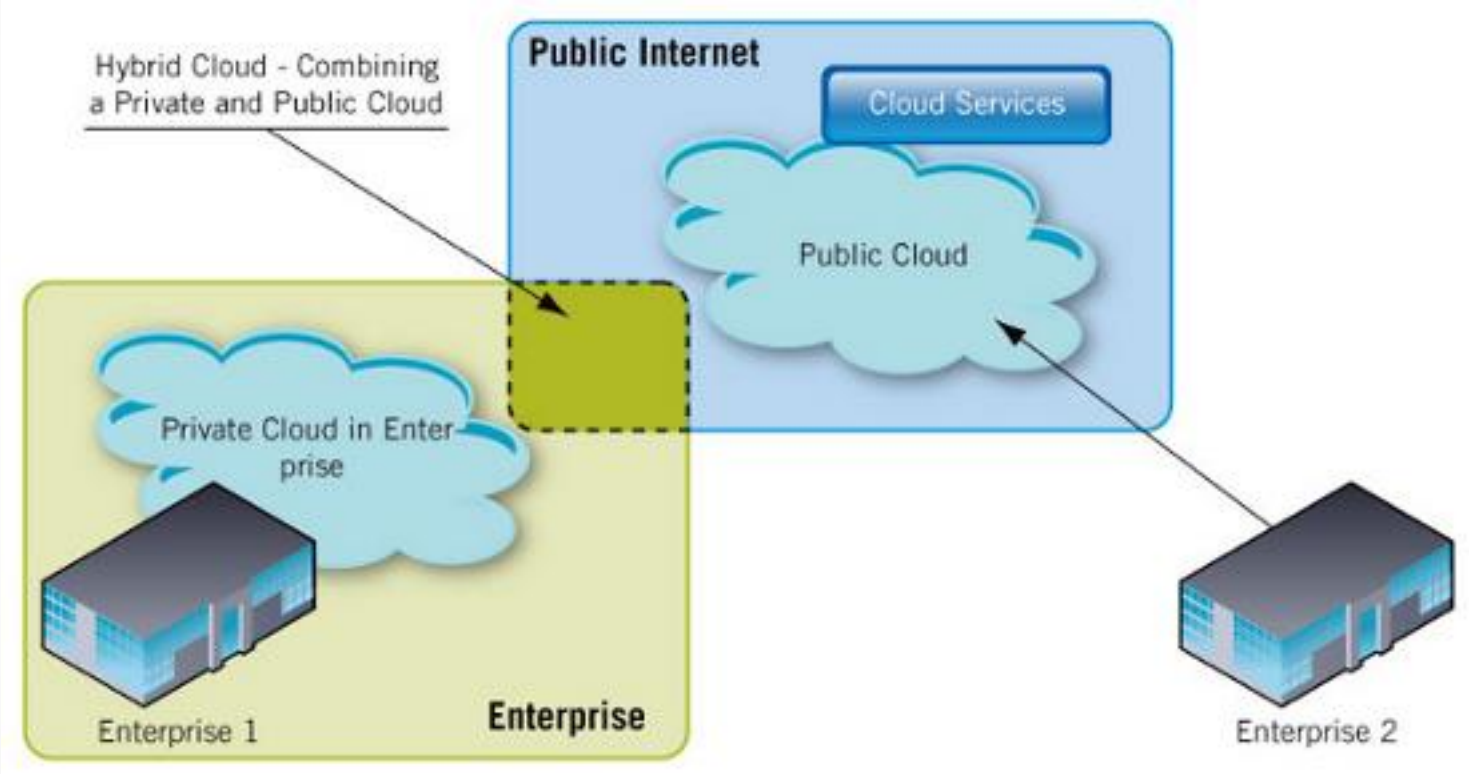
- Private cloud
- Public cloud
- Hybrid cloud

Public vs. Private models



Source of the image: http://http://www.skali.net

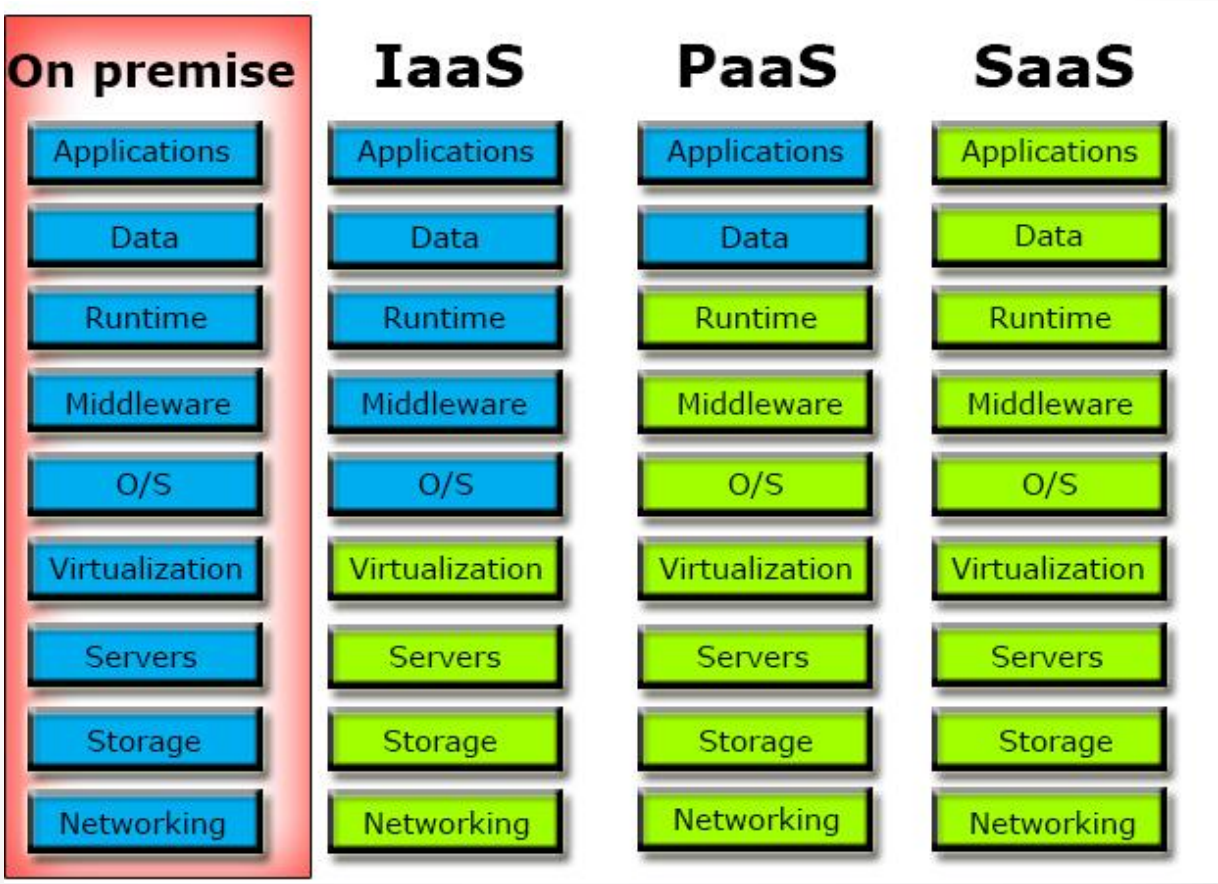
Hybrid model



Source of the image: http://www.dialogic.com/solutions/Cloud-Communications/Learn/Overview-of-Cloud-Communications.aspx

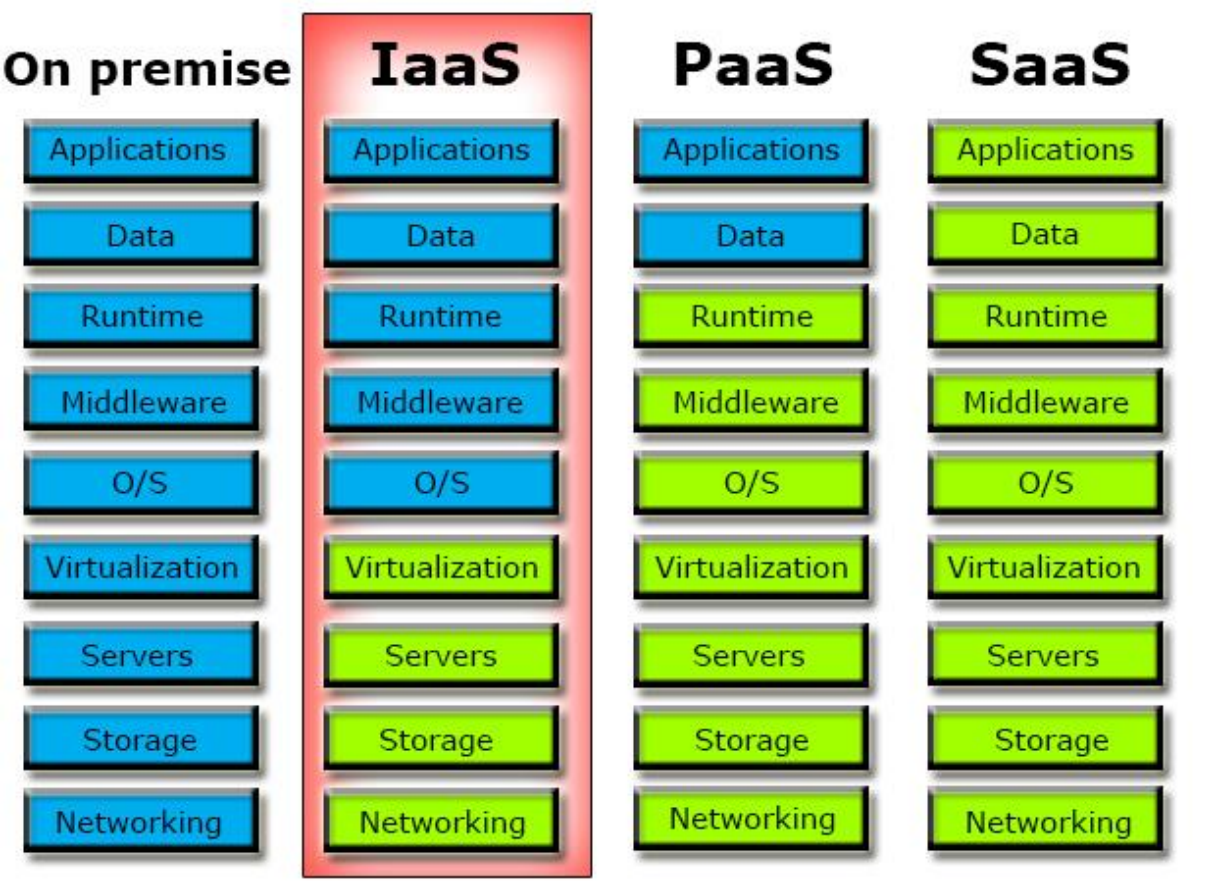
Databases

- **On premise**
  - **Own hardware, system, software … - everything**



Databases

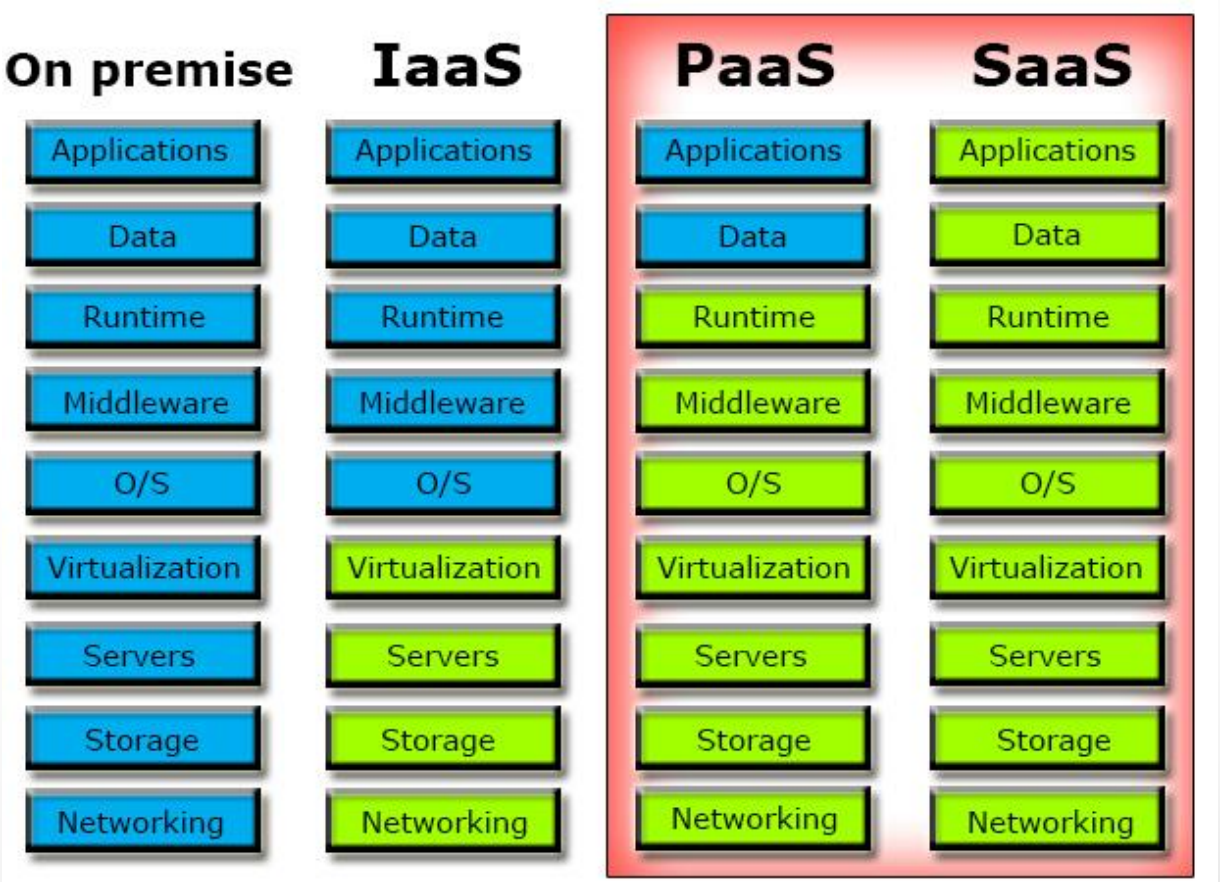
- **Virtual machine image**
  - **Database running on one machine – easy migration**
  - **Database running on more machines – difficult migr.**



Database as a Service

Databases

- **Database as a Service**
  - **– Database running on more machines – easy migration**



Database as a Service

- SQL-based data model
- NoSQL-based data model
- User
  - no expert in administration
  - working only with the data
- Vendor – thousands of databases

Features

- High-Availability
  - Everytime, everywhere
  - Datacenter
- Elasticity
  - Scaling
- Back-up
- Security
- Maintenance

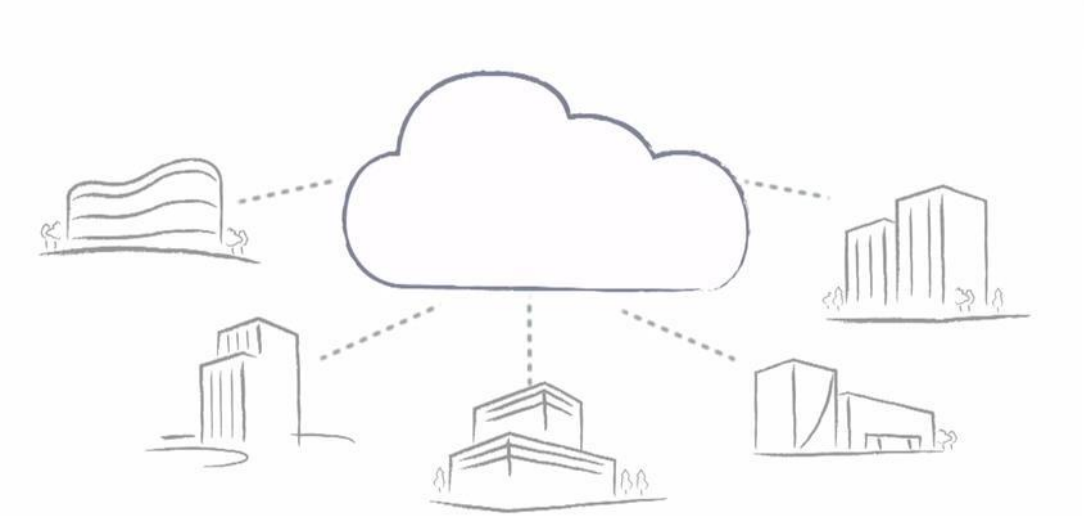
Requirements

- SQL
- Portable

Characteristic

- Pricing -> pay-as-you-go

Moving a company into cloud



- No small step
- Cooperation: Cloud service <-> existing system

Source of the image: http://http://www.oracle.com/

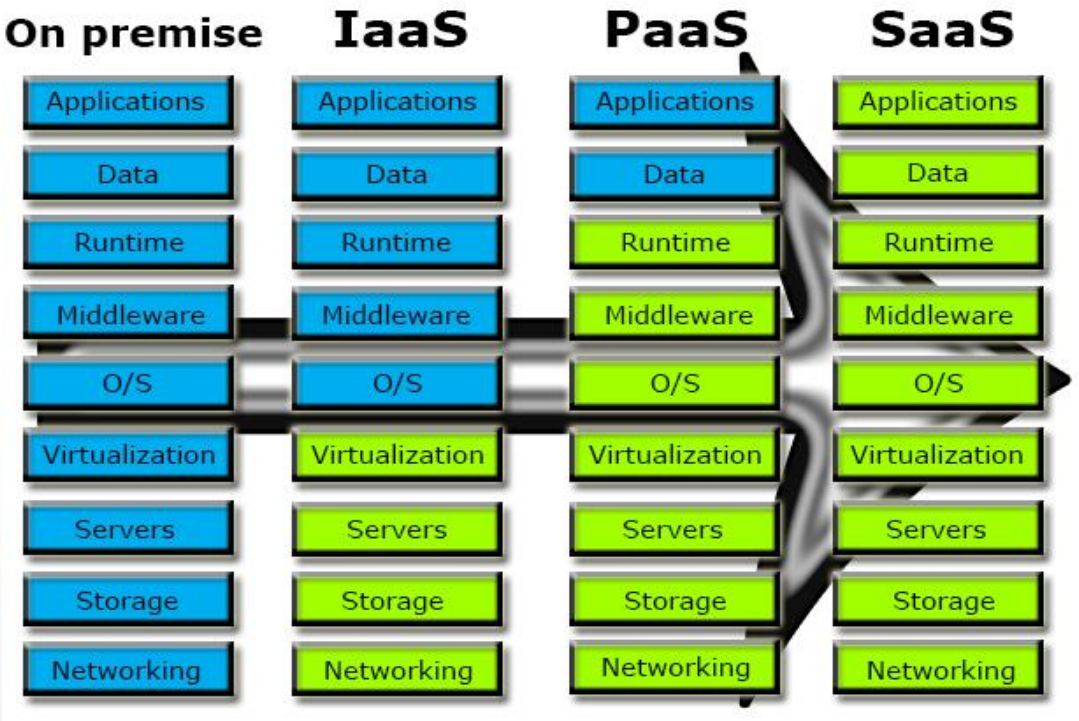
Moving a company into cloud

- Consider carefully: Positives & negatives

Positives	Negatives
No hardware	Paying for the service while still having the useless hardware
No administration	No management at creating and storing back-up -> must trust to provider
No maintenance	No management at security features -> must trust to provider
Automatic back-ups	Not having the data locally > must trust to provider
Automatic security features	
Automatic failover	

Moving a company into cloud

- The components which are moved: Applications, Data, Middleware (Database)



Providers

- Microsoft – Azure SQL Database
  - Platform – Microsoft Azure
  - Microsoft SQL Server
- Amazon – Relational Database Service
  - Amazon Web Services
  - Database engine: Oracle, MySQL, PostgreSQL, Microsoft SQL Server
- Google – Google SQL
- Xeround
- Salesforce

Summary

- Standard database system
- Useful and easy solution to run a database
- My future work:
  - Google SQL
  - Comparison Microsoft Azure, Amazon RDS, Google SQL
  - Measuring the services' performance