Cloud Computing

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What is Cloud Computing?

Cloud computing :
  - Internet-based computing
  - large groups of remote servers are networked
  - sharing of data-processing tasks, centralized data storage, computer services and resources
  - Any computer related task that is done entirely on Internet

What is Cloud Computing?

- Allows users to deal with the software without having the hardware.
- Everything is done by remote, nothing is saved locally.
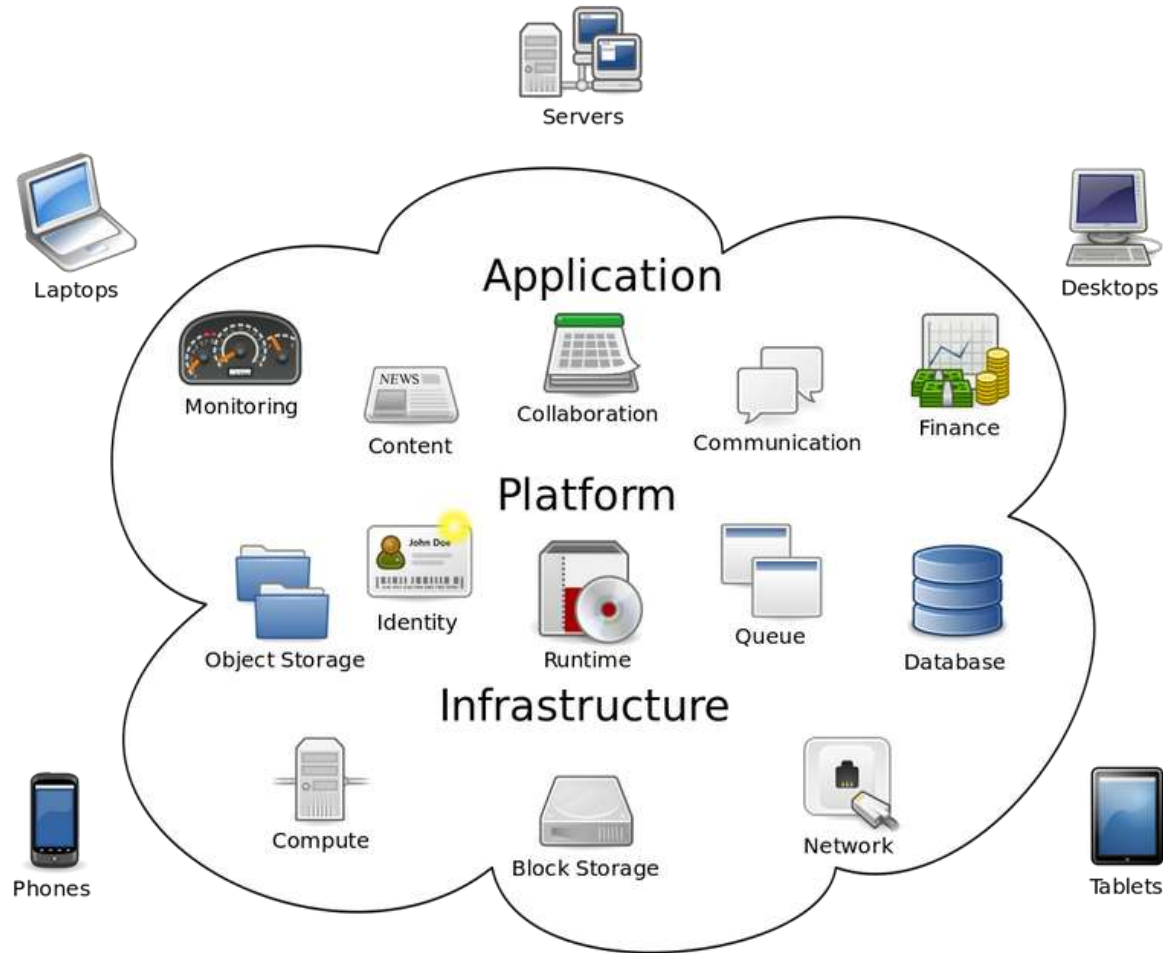
Cloud Computing Components

Fig. 1 Cloud Computing Components [5]

Characteristics

- Empowerment
- Agility and API
- Cost and Security
- Device and location independence
- Visualization
- Multi-tenancy
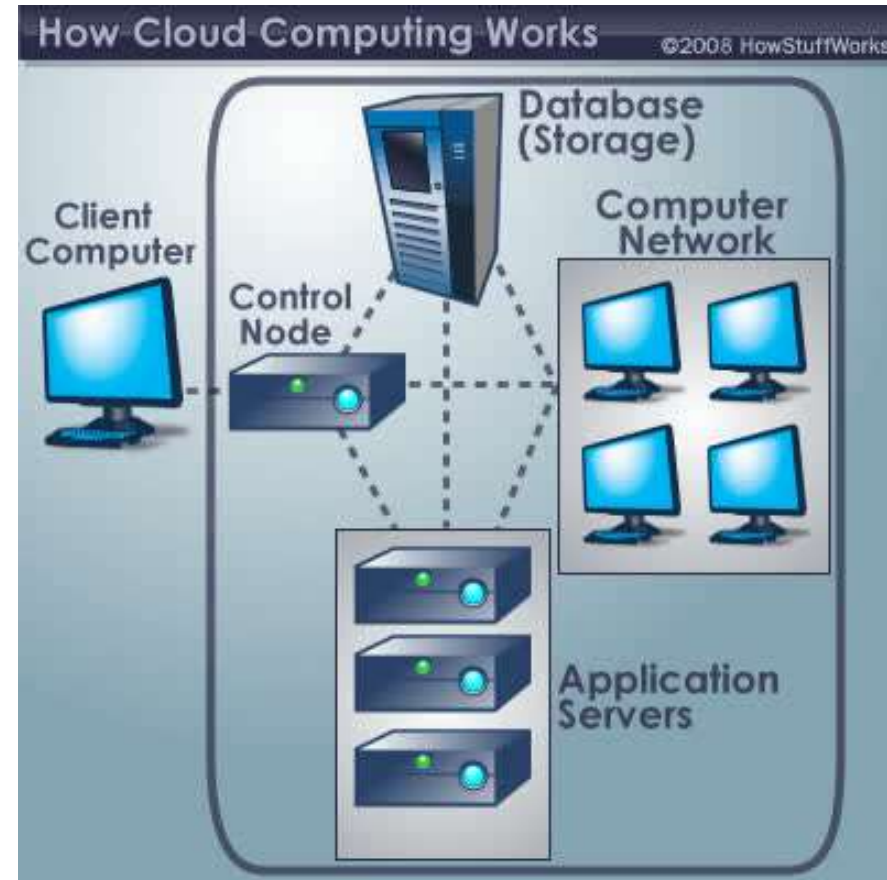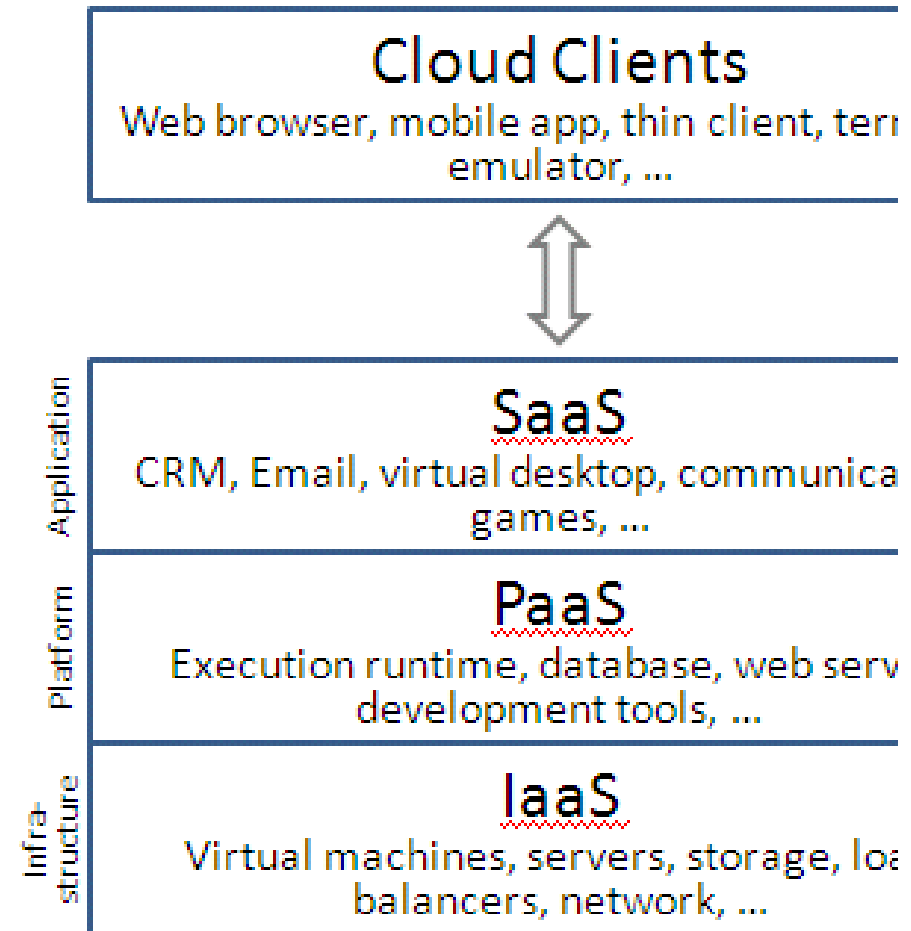- Reliability and Maintenance
- Scalability and Elasticity

Fig. 2 How Cloud Computing Works [6]

Service Models

- Infrastructure as a Service (IaaS)
  - Basic, service users maintain software
- Platform as a Service (PaaS)
  - Users are given software and hardware automatically
- Software as a Service (SaaS)
  - All software and hardware is transparent
  - User only knows their own access point

Cloud Clients
Web browser, mobile app, thin client, ter emulator, ...

Application

SaaS
CRM, Email, virtual desktop, communica games, ...

Platform

PaaS
Execution runtime, database, web serv development tools, ...

Infra-structure

IaaS
Virtual machines, servers, storage, loa balancers, network, ...

Deployment Models

- Public cloud
  - Done by service providers
- Community cloud
  - organizations from a specific community with common concerns
- Private cloud
  - operated solely for a single organization
- Hybrid cloud
  - composition of two or more clouds (private, community or public)
- Private Cloud Rentals
  - option to consider when security is a concern

Architecture

- The software systems involved in the delivery, communicating over a loose coupling mechanism
- The Inter-cloud
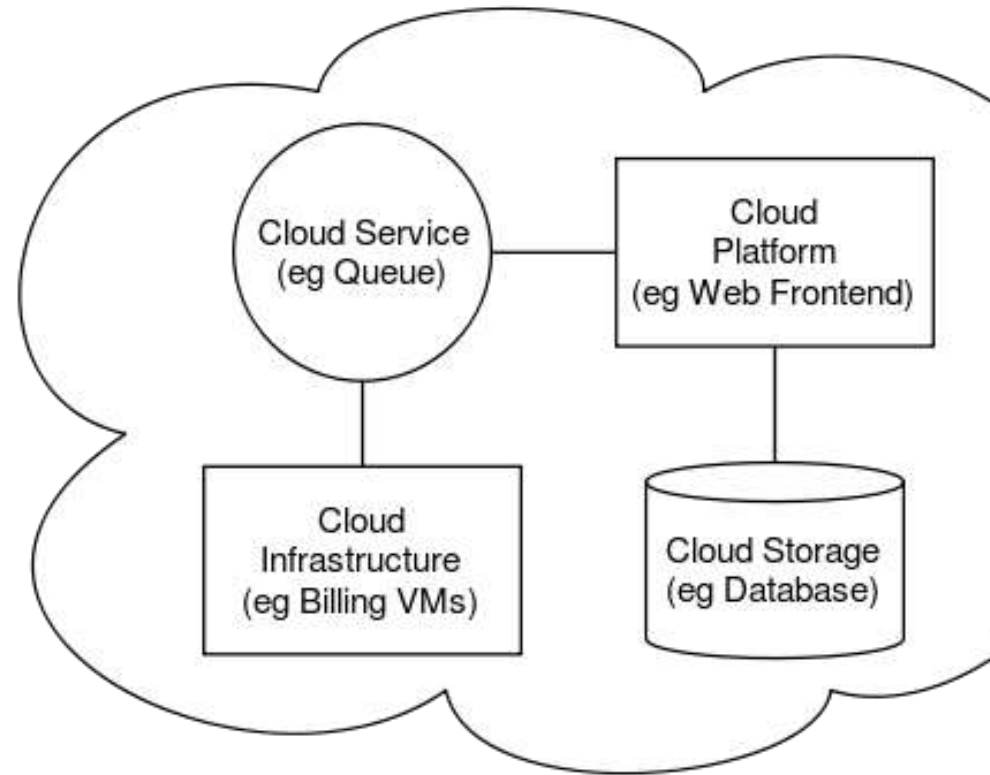 - The Inter-cloud is an interconnected global "cloud of clouds" and an extension of the Internet

Fig. 4 Cloud Architecture [8]

Cloud Engineering

- The application of engineering disciplines to cloud computing
- High level concerns
  - Commercialization
  - Standardization
- Governance in
  - Conceiving
  - Developing
  - Operating
  - maintaining

Security and privacy

- Data protection
- Physical Control
- Identity management
- Physical and personnel security
- Availability
- Application security
- Privacy
- Legal issues

Cloud Clients

- Google Chrome book
- Web browsers
- Company specific applications

Advantages

- Cloud everyday use
- To save huge amounts of data
- Easier to maintain information
- Makes security easy
- Maintainability and sustainability are better

THANK YOU