

# Cloud Computing

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## NIST Definition

- **Cloud Computing** is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model promotes availability and is composed of the following:

### Essential Characteristics:

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

### Service Models:

- Cloud Software as a Service (SaaS):
  - The provider allows the consumer to use applications running on a cloud infrastructure.
  - The consumer does not control the underlying cloud infrastructure.
  - Example: Google Docs, Salesforce CRM, SAP Business by Design.
- Cloud Platform as a Service (PaaS):
  - The consumer is allowed to deploy applications created using the programming languages and tools provided by the provider.
  - The consumer does not control the OS, storage system, or the network, but has control over the deployed applications and the application hosting environment.
  - Examples: Force.com, Google App Engine, Windows Azure.
- Cloud Infrastructure as a Service (IaaS):
  - The consumer is allowed to provision computational resources to be able to deploy and run arbitrary software.
  - The consumer does not control the underlying cloud architecture but has control over OS, storage system, deployed applications and networking components (to some degree).
  - Examples: Amazon EC2/S3, GoGrid.

### Deployment Models:

- Private Cloud
- Community Cloud
- Public Cloud
- Hybrid Cloud

Source(s):

<http://www.nist.gov/itl/cloud/upload/cloud-def-v15.pdf>

## Berkeley Definition

- **Cloud computing** refers to both the applications delivered as services over the internet and the hardware and systems software in the datacenters that provide those services.
- The services themselves are called **Software as a Service (SaaS)**.
- The datacenter hardware and software is called **Cloud**.
- Types of clouds,
  - **Public Cloud**: A cloud that is made available to the public in a pay-as-you-go manner.
    - The service being sold here is called **Utility Computing**.
  - **Private Cloud**: The internal datacenters of a business or other organization which are not made available to the public.
- The terms **Hardware as a Service (HaaS)**, **Infrastructure as a Service (IaaS)** and **Platform as a Service (PaaS)** are not precisely defined.

Source(s):

<http://www.eecs.berkeley.edu/Pubs/TechRpts/2009/EECS-2009-28.pdf>