What do clouds smell like?

Cloud Computing: An Introduction

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Cloud computing: Definition

- Metaphor for the Internet (many hype and buzzword).
- The first academic use: a 1997 paper (Ramnath K. Chellappa).
- "*Computing paradigm where the boundaries of computing will be determined by economic rationale rather than technical limits*" (Chellappa)
- "A style of computing in which dynamically scalable and often virtualized resources are provided as a service over the Internet" (Wikipedia)
- Combinations of IaaS, PaaS and SaaS concepts.

Clouds are hardware-based services offering compute, network and storage capacity where:

1. Hardware management is highly abstracted from the buyer.
2. Buyers incur infrastructure costs as variable OPEX.
3. Infrastructure capacity is highly elastic (up or down).

Features

- No CAPEX investment (no pay per machine)
- Pay only what you use & need
- Service Oriented Infrastructure
- Delegated Management Services
- On demand

Cloud Computing is a technology that allows converting IT infrastructure into a Service (IaaS).

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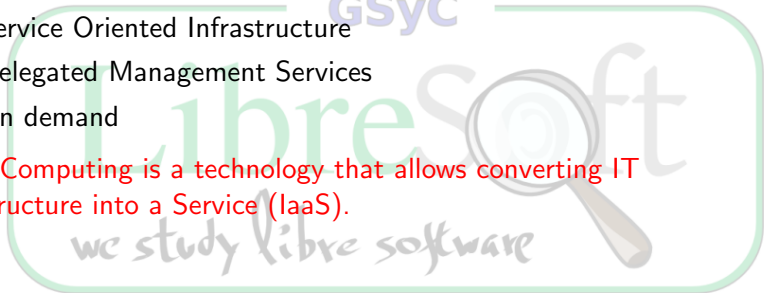
Main Cloud advantages

- Elastic scalability ("infinity")
- Fast Provision
- Lower IT costs
- Measuring and invoicing: Flexible-prices model
- Autonomic deployment model
- Service catalogue on demand
- Advanced virtualization
- Energetic (electrical) efficiency
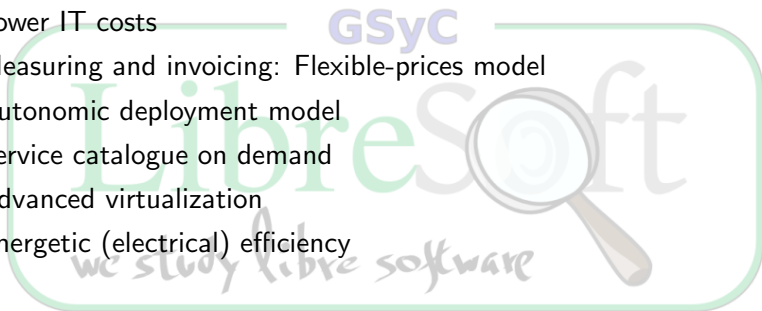
What is NOT Cloud Computing?

- It's not the same as virtualization managament
- It's not the same as a utility computing
- It's not the same as an autonomic computing
- It's not the same as SaaS
- It's not the same as Network services
- It's not the same as Grid computing

Many CC deployments depend on grids, have virtualization and autonomic characteristics and bill like utilities.

- Simple concept: access by suscription
- Pay per use (time of deployment, bandwidth and public IPs)
- There is no initial investment.
- There is no commitment to stay.
- Complete self-service!
- Criticism: 144% more expensive than DC, SLA, no support...

Another Cloud providers: Joyent, terremark, flexiscale, mosso.com, GoGrid, A-Server (daas.com)...

- Controlled by cloud provider and under his property
- Users cannot access the underlying FLOSS
- No portability among providers
- Without control in product roadmap
- What about users data?
- The client "get married" with AWS

Cloud solutions are proprietary solutions based in FLOSS solutions!

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Cloud Computing: FLOSS solutions

- Public cloud (for datacenters, hosting providers...)
- Private clouds (for institutions, research centers...)
- Allows to adapt infrastructure to business model.
- No vendor lock-in: interoperability.
- Open Standards: Open Cloud Computing Interface (Open Cloud API), Open Virtualization Format (OVF) – hypervisor-independent "packages".

Open Nebula

- Integration with any component in the cloud ecosystem, such as cloud providers, hypervisors, cloud-like interfaces, virtual image managers, service managers, schedulers…
- Dynamic deployment and re-placement of virtual machines on a pool of physical resources
- Open and flexible architecture and interfaces, libre software (Apache license).
- Partially funded by the "RESERVOIR – Resources and Services Virtualization without Barriers" FP7 project.

The OpenNebula Virtual Infrastructure Engine:

Questions?