Cloud Computing

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IT Insight podcast

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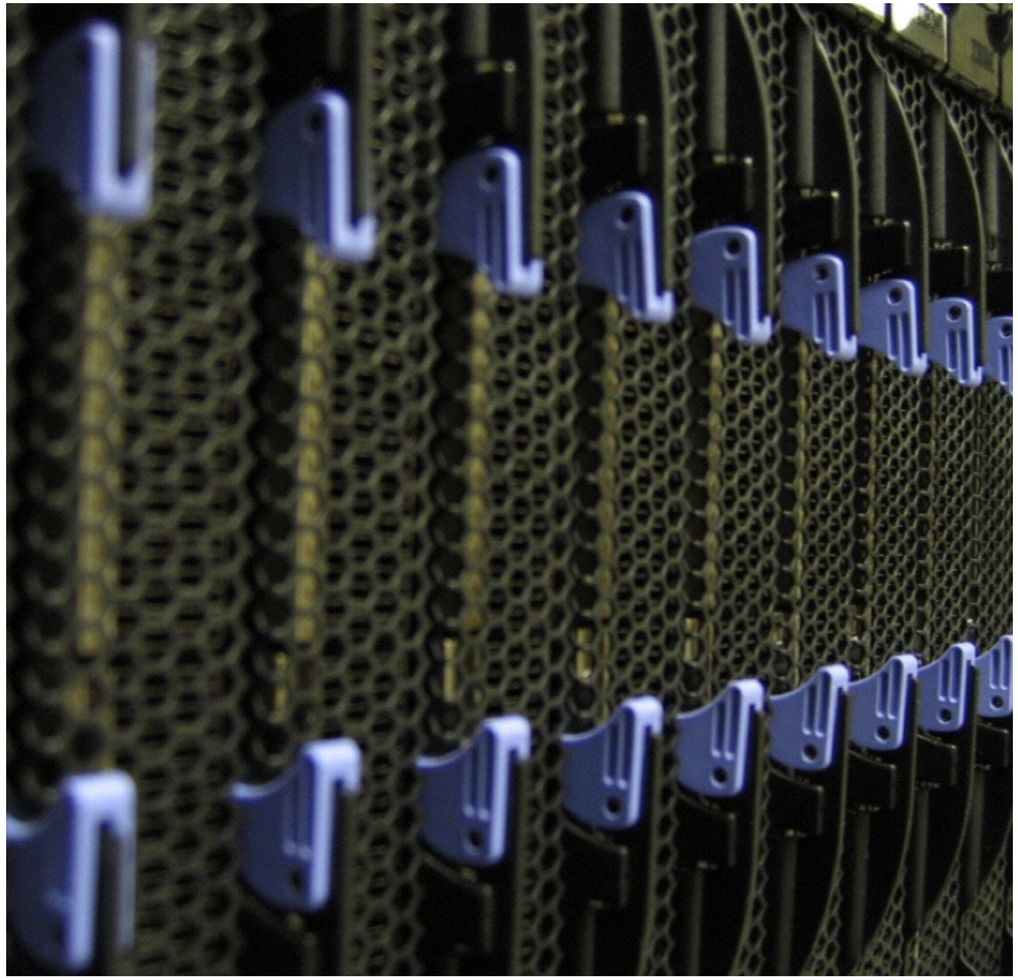
Utility Computing

- This concept originated in the 60's
- It relates to the idea that in the future people would use computing power on-demand, and pay for it just like water or electricity, based on metered consumption

Grid Computing

- Grid computing started the cloud computing revolution by exploring ways to replace large expensive computers with large clusters of cheap commodity interconnected servers



The vision behind Cloud Computing

- Outsourcing
- Scalable
- Pay-per-use
- Take advantage of economies of scale

Key elements

- Automatic provisioning
- Scalable Platform
- High levels of hardware utilization
- Low maintenance costs

What is Cloud Computing good for?

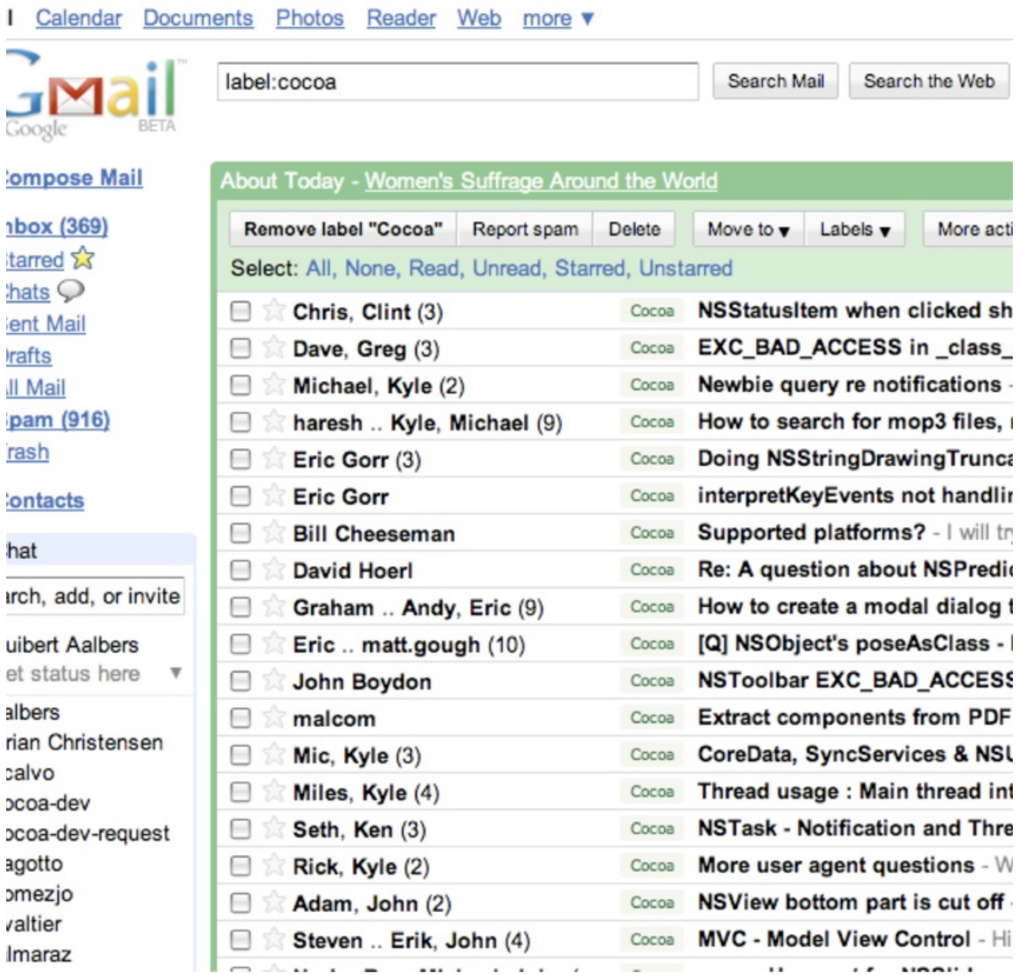
- Today:
  - Highly standardized applications
  - E-mail
  - Basic CRM and ERP applications
  - Storage (Pictures & other kind of files)
  - Online office productivity suites
- Tomorrow: Custom applications

Cloud Computing types

- Cloud Computing exists in different flavors
  - Software as a Service (SaaS)
  - Infrastructure as a Service (IaaS)
  - Platform as a Service (PaaS)

Software as a Service (SaaS)

- Reaching high utilization levels and low provisioning and management costs with highly standardized applications is easy
- Similar to an ASP
- What is really hard is to be able to scale any application



Infrastructure offerings (IaaS)
Amazon Web Services

- Amazon offers a variety of services for those who want to publish apps on their cloud
  - S3
  - EC2
  - Simple DB
  - SQS

Service Level Agreement (SLA)

- Amazon offers different SLAs for only some of their services (EC2 & S3) and offers discounts if they don't meet them, as long as the customer notices it and asks for a refund
  - This could be hard since there are no good tools to monitor the availability of the service or get alerts when there are problems
  - The end result is that Amazon Web Services are mainly used by startups that offer non-critical free services, financed through advertising

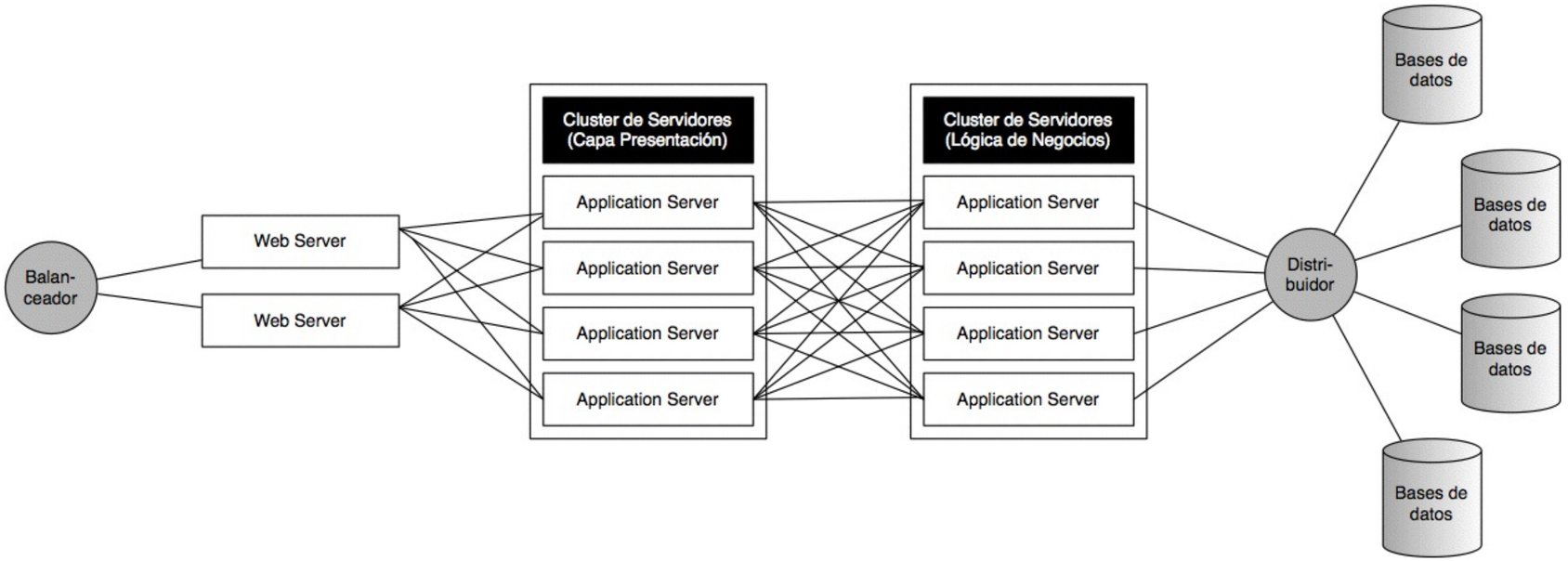
Amazon Web Services

- Amazon provides a price-competitive infrastructure for developers to publish their applications on the cloud
- However, this comes at a high cost
  - Higher development and management complexity
  - No acceptable SLAs for mission critical applications, or response time consistency
  - No adequate monitoring or automatic provisioning solutions
  - It is very hard to migrate to another platform

Amazon Web Services Summary

- The solution proposed by Amazon is cheaper than a traditional outsourcing because
  - All the work, except provisioning the virtual machines, has to be performed by the customer
  - Acceptable service levels are not guaranteed
- Applications are only scalable if they have been designed by their developers to be scalable
  - That is difficult as it requires a brilliant team both for development and managing the application

Scaling is hard



Scaling is hard

- When an application can't handle any additional load, specialists need to be called in to detect and remove the bottlenecks
  - Web server
  - Business logic layer
  - Database layer
- Although there are many strategies to help applications scale, eliminating bottlenecks can be difficult and expensive since there are very few people with real world experience

Google App Engine (PaaS)

- Currently in beta
- Python or Java (no J2EE) development
- Poor frameworks
- Limited, proprietary, not relational datastore designed to scale
- No SLAs, some downtime issues

Windows Azure (PaaS)

- Launched on February 1st, 2010
- Based on Windows Server
- Not as scalable as Google App Engine
- Not very price competitive
- Only attractive to .Net developers

Application Monitoring on the cloud

The lack of monitoring solutions for applications running on cloud computing platforms has opened new opportunities for innovative companies, even though those solutions remain a work in progress

Limits to the Cloud Computing model

- Many companies cannot adopt the cloud model for legal reasons
  - Data Retention regulation
  - Privacy Protection laws
- Not willing to trade management & hardware costs for development costs

Private Clouds

- Despite all the talk about cloud computing, there are many reasons why most companies cannot fully embrace this technology
- However, that doesn't mean they can't rip the benefits from Cloud Computing in their own data centers, by building a private cloud
  - Increased hardware utilization
  - Reduced management costs
  - Faster response to business requirements

Open Cloud (PaaS)

- In order for PaaS to really succeed in the marketplace, it has to be based on open standards
- Otherwise, the danger of vendor lock-in would be considerable
- This would hinder adoption of the technology

OpenCloud Manifesto

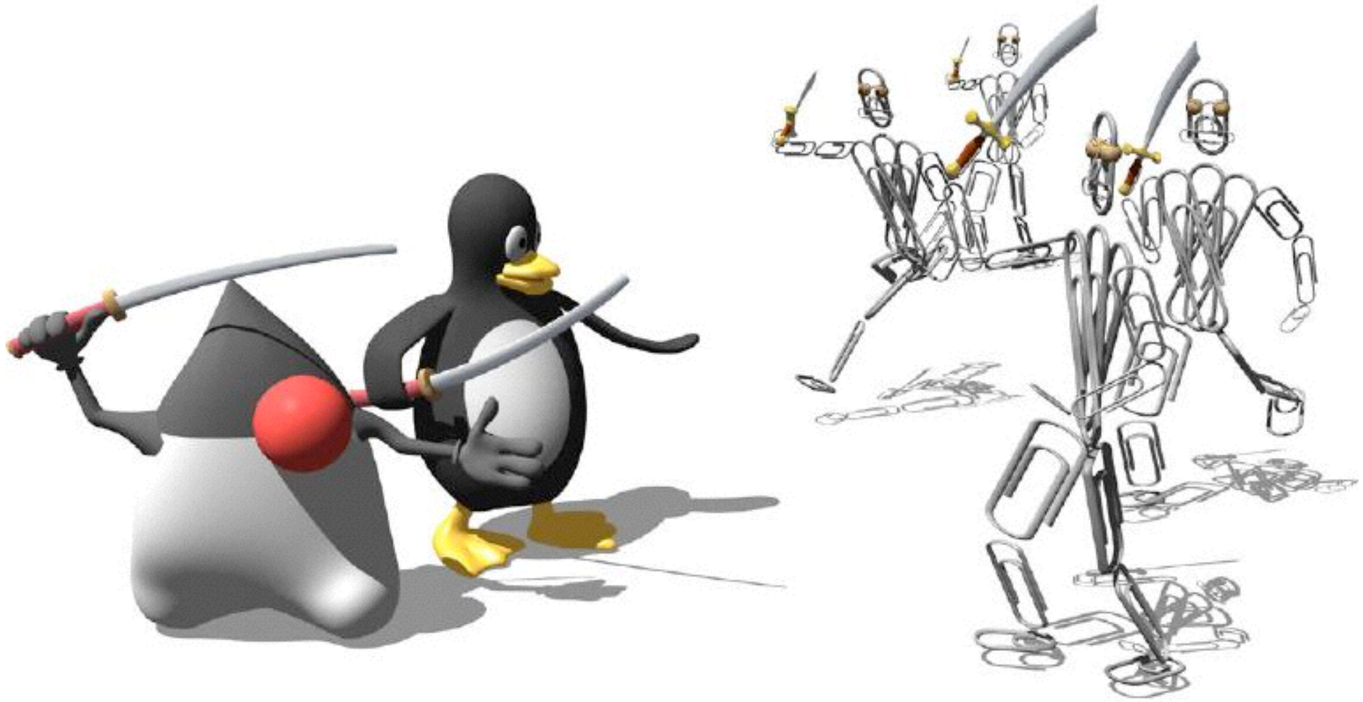
Signed by a group of 300 industry leaders who want to define open cloud computing standards in order to prevent vendor lock-in

Simple Cloud API

- API abierto impulsado por Zend, GoGrid, IBM, Microsoft, Nirvanix y Rackspace
- Más información en http://www.simplecloud.org/

Conclusion

- Cloud computing is the future of computing, simply because other models are not competitive from an economics standpoint
- We are just starting to live the beginning of the revolution
  - Currently it is an excellent solution to standardized applications such as e-mail, blogs, etc.
  - However, it is still an emerging technology for custom applications, since developing on public clouds such as Google or Amazon remains hard
  - Private clouds remain for now the best solution for custom enterprise applications



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