Cloud Computing

Everything as a Service

Cloud Computing

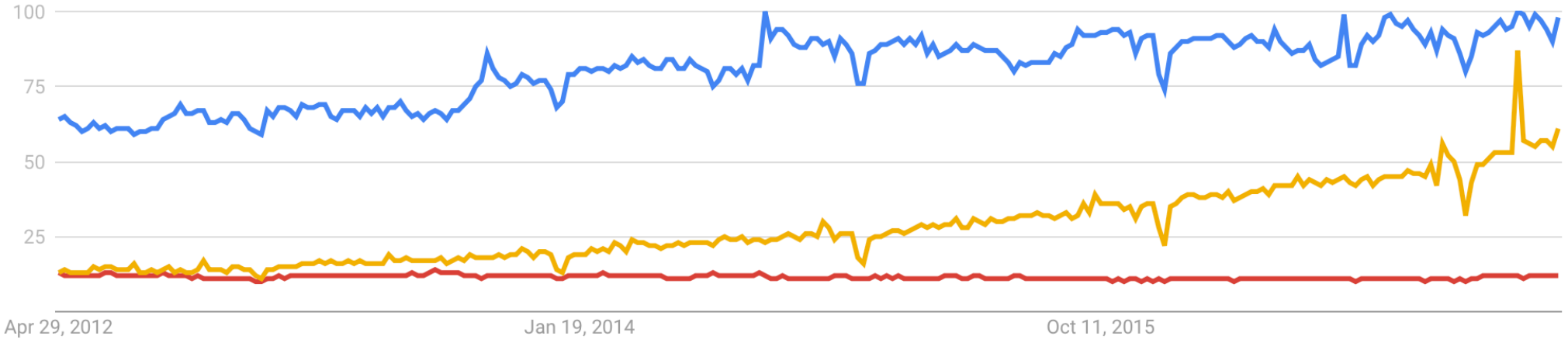
- Running a DataCenter is expensive.
  - Costs to much to built (CapEx)
  - Costs to much to run (OpEx)

"Need milk? Don't buy the cow… buy the milk"

- Rent what you need instead of buying and running everything!
- Cloud Computing advantages:
  - Pay per use
  - Instant Scalability
  - Security
  - Reliability
  - APIs

The hype

Cloud Computing AWS VPS



Definition (NIST)

- “Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.“

SaaS

- Salesforce, Google Apps, MS Office 360

PaaS

- MS Azure, Google App Engine, Heroku

IaaS

- Amazon, Google Cloud Platform, IBM Bluemix

IaaS – Infrastructure as a Service

- Infrastructure as a Service : Grids of virtualized servers, storage & networks
  - E.g. Amazon (EC2, S3, EBS), IBM Bluemix, Google Cloud Platform
- Access to infrastructure stack:
  - Full OS access
  - Firewalls
  - Routers
  - Load balancing
- Advantages
  - Pay per use
  - Instant Scalability
  - Security
  - Reliability
  - APIs
- Examples

PaaS – Platform as a Service

- The abstraction of applications from traditional limits of hardware allowing developers to focus on application development and not worry about operating systems, infrastructure scaling, load balancing and so on.
  - Examples include Google App Engine (Java, Python), MS Azure (.net), Heroku (RoR)
- Platform delivery model
  - Platforms are built upon Infrastructure, which is expensive
  - Estimating demand is not a science!
  - Platform management is not fun!
- Advantages
  - Pay per use
  - Instant Scalability
  - No sysadmin tasks
  - Better Security

SaaS – Software as a Service

- Software-as-a-Service: Applications with a Web-based interface accessed via Web Services and Web 2.0.
  - E.g. Google Apps, SalesForce.com and social network applications such as FaceBook
- Software delivery model
  - Increasingly popular with SMEs
  - No hardware or software to manage
  - Service delivered through a browser
- Advantages
  - No Installation Required
  - Not platform specific
  - Automatic Upgrades
  - Access your data anywhere

Cloud Computing

- Lower cost of ownership
- Reduce infrastructure management responsibility
- Allows for unexpected resource loads
- Faster application rollout
- How does cloud economy work ?
  - Multi-tenent
  - Virtualization lowers costs by increasing utilization
  - Economies of scale afforded by technology
  - Automated update policy
- Risks
  - Security
  - Downtime
  - Access
  - Dependency
  - Interoperability

Cloud Business Models

	Suitable Apps	Maintenance (HW, SW, Support)	Quick Starts	Efficiency	Cash Flow	Management and Compliance
Public	Limited	Excellent	Excellent	Excellent	Excellent	Newer Issues Up Front
Hybrid	Broad	Good+	Good	Good+	Good	Fewer Issues
Private	Almost All	Primarily HW Benefits	Reduces HW Setup	Good+	Good	Few New Issues

Build a wordpress site on the cloud

- Use either:
  - AWS
  - IBM Bluemix
  - Google Cloud Platform
  - MS Azure
- Make use of their services (not just VM hosting)