Making sense of cloud
ACCORDING TO THIS, THE PLANET EARTH WAS ONCE POPULATED BY HUMANS, THEN IN 2012...

THEY ALL MOVED TO THE CLOUD.
History: A path to the clouds

1960’s mainframe partitioning (early virtualization)

“Vision: Computing as a public utility” – John McCarty

1980’s Client/Server

1990’s Salesforce.com SaaS CRM “End of software”

1996 SoftPC emulator by Insignia

1999 software virtualization VMWare

2002 X86 hardware virtualization support

2006 Amazon S3/EC2/AWS, IaaS pay-per-use

Rackspace, Nebula, Eucalyptus

2010 PaaS G1 EngineYard, Heroku, Google App Engine, Azure

Openstack open sourced

2011 Mobility

2012 PaaS G2 OpenShift, Cumulologic, Cloud Foundry
Terms

- **IaaS** - Infrastructure as a Service
- **SaaS** - Software as a Service
- **PaaS** - Platform as a Service
- **Big Data** – Analytics
- **MaaS** - Mobility as a Service

HOST
CONSUME
BUILD
ANALYZE
ACCESS
Stacking things up

- Mobility
- Virtualization
- Physical Servers
- Infrastructure (IaaS)
- Platform (PaaS)
- Software (SaaS)
- Big Data
Virtualization

In computing, **virtualization** is the creation of a virtual (rather than actual) version of something, such as a hardware platform, operating system, storage device, or network resources. (Wikipedia)
Infrastructure as a Service (IaaS)

- Compute, Storage, Network
- On-demand Self Service
- Broad network access
- Resource pooling
- Rapid Elasticity
- Virtualization
- Optimization
- Pay-as-you-go and metered
- Predefined images (catalogs)
Infrastructure as a Service (IaaS)
CACI services and solutions

- Command center design and build-out (physical, IT)
- Virtualization of IT infrastructure
- Security Compliance
- Hosting
- Enterprise Infrastructure/Networks
- Enterprise Data Centers
- Enterprise Support
Software as a Service (SaaS)
Software as a Service (SaaS)

- Simplified Version Management
- Pre-packaged
- Web enabled
- Zero installation
- License model

- Tenancy
- Sharing
- Integration
- Data Mobility
- Monitoring & Performance
- Legacy integration
Platform as a Service (PaaS)

- Cloud “Operating Systems”
- API’s
- Rapid Development
- Agility
- Consistency
- Re-Use
- Security
- Scale-Out
- Library of services
- Configuration Management
Platform as a Service (PaaS)

- **Emerging PaaS solutions**
  - Open Source, Open API
  - Commercial

- **Security compliance?**
  - FISMA
  - FEDRAMP
  - FIPS
Traditional application stack

- Supports fixed number of users
- Skillsets
  - App developer
  - Web scaling & replication
  - Disaster recovery
  - DB admin
  - OS
- Purpose built
Traditional application stack challenges

- Lifecycle
  - Configuration of stack
  - Deployment
  - Patches
  - Security
  - Updates
- Scaling
- Fault tolerance
- Domain experts required
- Automation is custom
- Dev’s vs Ops (IT)

Starts to get hard and complex
Traditional application stack with PaaS becomes

You Manage

App
Web/App Server
Scripting
Database
OS

App
PaaS (db/script/OS)
IaaS
Comparing management responsibilities

- **Infrastructure (as a Service)**
  - Applications
  - Runtimes
  - Security & Integration
  - Databases
  - Servers
  - Virtualization
  - Server HW
  - Storage
  - Networking

- **Platform (as a Service)**
  - Applications
  - Runtimes
  - Security & Integration
  - Databases
  - Servers
  - Virtualization
  - Server HW
  - Storage
  - Networking

- **Software (as a Service)**
  - Applications
  - Runtimes
  - Security & Integration
  - Databases
  - Servers
  - Virtualization
  - Server HW
  - Storage
  - Networking
Big Data and Analytics

- Next Generation Data Warehouse
- Data mining
- Unstructured data
- Distributed
- Iterative
- Incomplete data sets
- Better “Time to value”
- Complex relationships
- Sensors
- Social
Big Data and Analytics

- Search engines
- Social media
- Messaging
- Forums
- Blogs
Mobility as a Service (MaaS)
Mobility as a Service (MaaS)

- Development environments (MDM)
- Workflow
- Provisioning
- Mobile and Web enabled apps
- Security
  - Mobile Device Configuration
  - Mobile App Delivery
  - Testing