

# Cloud opportunities for Start-ups

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# Presenter



- Master of Science in applied mathematics, Master of Business Telecom
- 2 years at Dutch Government research lab (TNO) – Acoustics, speech intelligibility
- 15 years at Philips, AT&T Network systems (now Alcatel-Lucent) – engineering, documentation & training, product management, sales
- 2 years at Philips Research Labs – CMM, SDE
- 3 years at Atos-Origin – set-up Silicon Valley branch
- 10 years at VERITAS/Symantec – technology scouting, technology trend monitoring
- 2009- CEO founder Mercury Swan Consulting – start-up consulting, technology scouting, technical due diligence, IP strategy

# My first Cloud



- 1999 met VMware. Server Virtualization
- 2004 met Xen. Open Source Virtualization
- 2007 Adviser to Qlayer. Cloud Management
- 2010 Adviser to Pancetera. Virtual Machine storage management
- 2010 Adviser to Amplidata. Unbreakable storage
- 2012 Adviser to DynaCloud. Cloud Management

# Defining the Cloud



# When is it the Cloud?



According to Gartner the required attributes are:

- **Service-Based**: implementation details hidden from the user
- **Scalable and Elastic**: service can scale up and down fully automated, without interruptions
  - CA: 67% of cloud users list this #1 reason
  - AT&T: 70% of corporate IT infrastructure has 20% or less utilization
- **Shared**: services share pools of resources
- **Metered by Use**: pay by the drink, pay only for what you use
  - CA: cloud users save 11.5% on annual IT costs
- Uses **Internet** Technologies: to connect users with the services

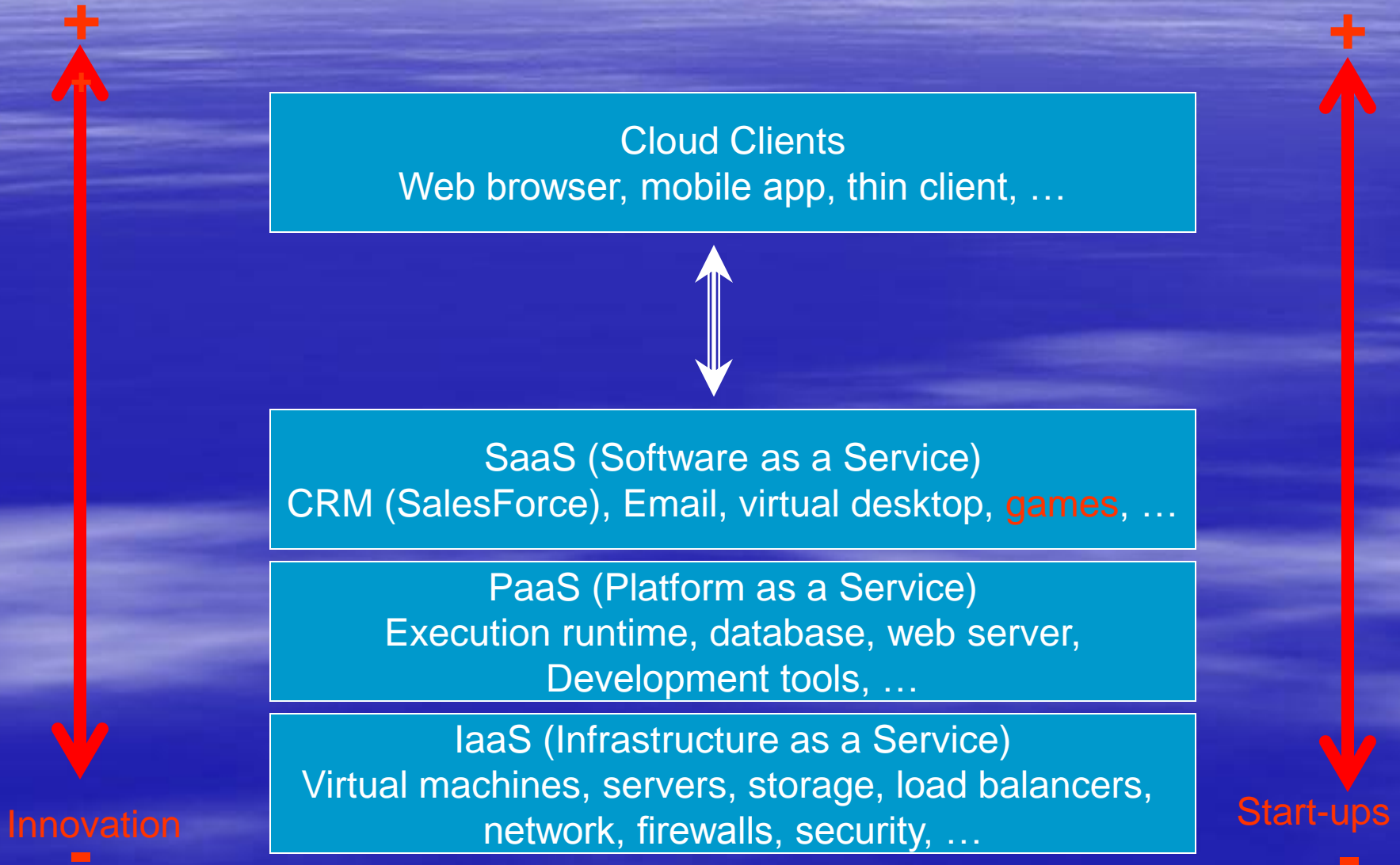
# Is this a Cloud?



- Phase 1: multi-user Unix system down the hall
- Phase 2: System moves to different building
- Phase 3: System moves to different town
- Phase 4: System moves to different state
- Phase 5: System moves to different country



# Cloud layers

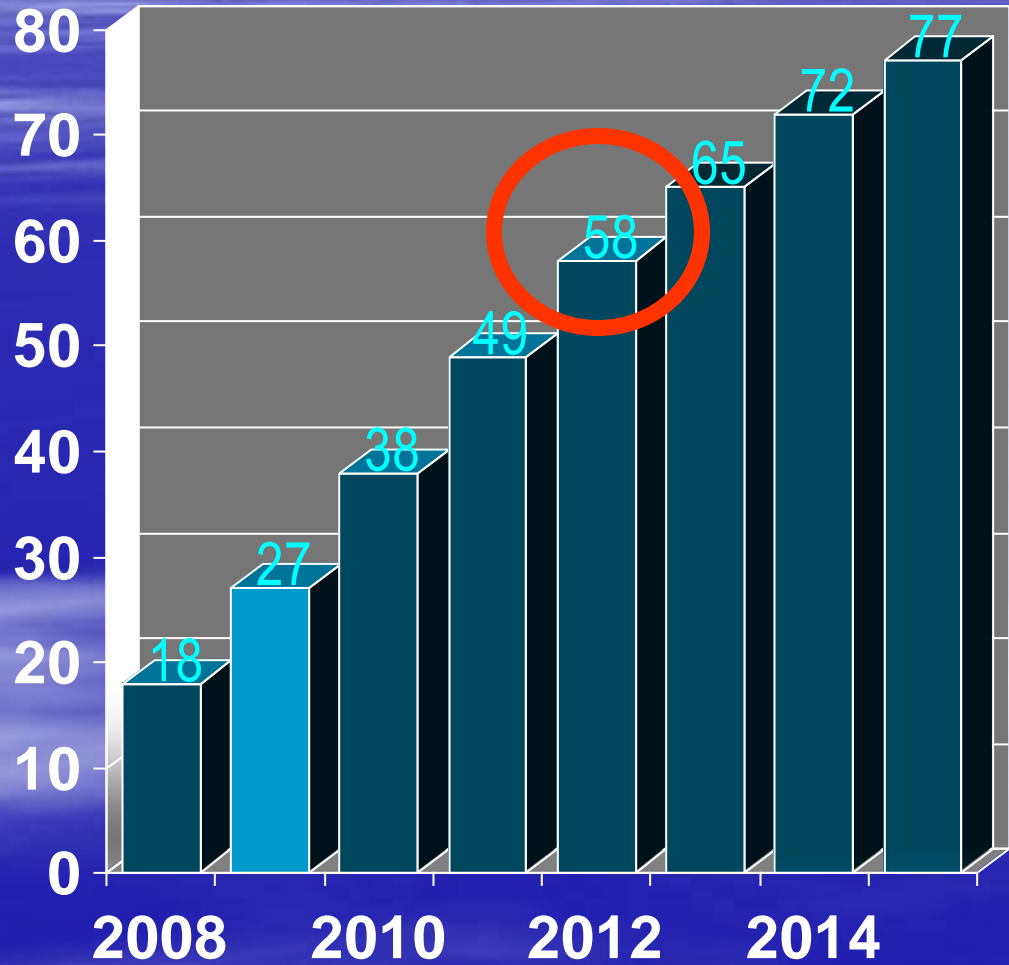


# Technologies that created the Cloud (all from start-ups)

- The Internet
- Open source: Linux, Apache, PHP, Java
- Server virtualization: VMware, Xen
- SaaS model: Yahoo mail, SalesForce
- Smart Phones: Apple-iPhone, Android



# Virtualization Tipping point in 2012\*



Percentage of  
X86 workloads running  
In a Virtual Machine

\*Gartner 2012

# More Definitions

- Private Cloud: you own all the resources
- Public Cloud: you do NOT own any of the resources
- Hybrid Cloud: some resources you own, some resources owned by others
- **Personal Cloud**: Public cloud for the individual: Apple's iCloud, DropBox, Gmail

# Will it be a big Cloud?



- 451 predicts market will be \$17B by 2013
- IDC predicts \$55B by 2014
- Visiongain: the market will be \$83B in 2016
- Forrester: \$241B in 2020
- Bloomberg: \$270B in 2020
- IDC: by 2015, about 24% of all new business software purchases will be SaaS
- IDC: Mobile SaaS Market will grow to \$3.7 billion by 2016, with a five-year compound growth rate (CAGR) of 25.8%
- Estonia government requires all services to be cloud based in 2012

# Will it be a big Cloud?



- US medical imagery grows 27% CAGR in 2010-2018
- The U.S. Government market grows 16% CAGR in 2013-2018, to hit \$10B by 2018
- Deloitte: SaaS will replace 2.34% of enterprise IT spending in 2014 rising to 14.49% in 2020
- Cisco predicts that Global cloud IP traffic will increase twelvefold over the next 5 years
- McKinsey: Public Cloud spending will grow from 2% of IT spending in 2010 to 6% by 2015 and 10% by 2020
- **So yes, the forecast for the Cloud is Sunny!**



# Case study: Wells Fargo\*

Wells Fargo acquired Wachovia and used Cloud technologies to integrate the IT systems:

- Reduced top tier-4 data centers from 7 to 3
- Reduced regional data centers from 13 to 10
- Reduced number of applications by 25%
- Accelerated application server provisioning time from months to 10 days
- Overall saved \$1 Billion in IT costs

# Opportunities for start-ups



# Cloud Opportunities for Start-ups



- The Cloud is your data center
- Solving the problems with the cloud
- The Personal Cloud allows you to offer something new.

# The Cloud is your Data Center

- **scale quickly**: start small, grow your IT infrastructure as quickly as you do (but not faster!),
- **be cost-efficient**: pay only for what you use, no investments up front (long term your own data center might be cheaper)
- **be global**: be everywhere on the globe from the start, be local everywhere, lower latencies, better performance, quicker response, results in happier customers, act like a global company

# Problems with the Cloud (Opportunities for Start-ups)



- Security (shared resource pools)
- Availability
- Reliability, Bandwidth, Connectivity
- Privacy
- Management of resources, performance
- Cloud Business model problems

# Security in the Cloud



- Resources (servers, storage, networks) are shared
- No physical perimeter like in the old days
- Insider access
- Encryption, who has the keys?
- Too many passwords, need for safe single sign-on
- Ease of use means low security?
- 2011: DropBox allows login without password
  
- **Start-ups**, we need bullet proof security that is simple to use
- Examples: FortKnock, CryptoPhoto, CloudLock, CipherCloud, BrainLoop, BatBlue, BlueCoat, PGP, Sentrigo, HyTrust,

# Availability of the Cloud



- 2009: Microsoft's SideKick unavailable 7 days
- 2009: Paypal unavailable for several hours several times
- 2010: Amazon AWS unavailable for 4 days
- 2010: 17,000 hotmail accounts unavailable
- 2010: Salesforce.com unavailable in January
- 2010: Terremark extended outage
- 2010: Rackspace four high-profile failures
- 2011: 150,000 gmails accounts unavailable
- 2011: Intuit tax services down twice for days
- 2011: Microsoft Business Productivity Online Standard Suite, 9 hours delay
  
- **Start-ups**, we need a multi cloud solution.
- Examples: YuruWare

# Reliability, Bandwidth, Connectivity

- Hotmail, Gmail, Yahoo, Amazon, all have lost data
- Kroll Ontrack survey: 65% of cloud users lost data more than once
- Bandwidth limits access to online storage (T1 is 1.5 Megabit/sec = 150 KByte/sec, so one 3 MByte photo takes 20 seconds)
- If your internet connection is down, the cloud is down!
- **Start-ups**, we need local caching, and failover solutions
- Examples: Amplidata, Panzura, Rightscale, Tzona, Axcient, Geminare, Incoming Media

# Privacy



- 800 million Facebook users know about privacy settings ...
- Clouds can and will track everything you do or have
- Clouds can share this with others
- All collected data can be subpoenaed by government
- If encrypted they will subpoena the keys
- Data retention policies. Who enforces these?
- "Guidelines on Security and Privacy in Public Cloud Computing," Special Publication 800-144, NIST
  
- **Start-ups**, we need an easy to use Privacy solution!
- Examples:

# Management of resources and performance



- Virtual machine sprawl, what's in them? Which versions?
- What runs where?
- Who uses what? Billing
- Who has access to what? Security
- How to improve performance?
- Automated management
  
- **Start-ups**, we need very large scale Plan, do, check, act.
- Examples: DynaCloud, Abiquo, Symplified, Puppet labs, Scout, UpTime Systems, Cloudkick, NetIQ, ScienceLogic, RightScale, Kaavo, Scalr, Morph, Cloudwatch, Splunk



# Cloud Business model problems

- IaaS: race to the bottom, only a few big ones will be left in the end
- PaaS: feature race, but also price
- SaaS: one size does not fit all

**Start-ups**, we need:

- Cloud migration
- Cloud failover
- Multi Cloud management solutions

# Personal Cloud

## The opportunities



- Online backup of devices, laptops, PCs: Mozy, Carbonite, Sosomebackup
- Device synchronization: Sugarsync, carriers
- Cloud drive: Dropbox, Google, Microsoft, box.net, Syncplicity(EMC)
- Cloud based music/video services: Pandora, Spotify, Amazon, Google, Sony, Netflix
- Communications: Skype, Twitter, Facebook, Linked-in, Tango,
- Cloud connected devices: Nest thermostat, Withings scale

# Personal Cloud

## More Opportunities



- Note taking/bookmarks: Evernote, Wikipedia, Tripit, Pinterest
- Fitness tracking: Runkeeper, MapMyRide, FitBit
- Location tracking/check-in: Foursquare, PlaceMe
- Grocery list sharing: GroceryIQ
- Photo/video sharing: Instagram, FaceBook, YouTube, TourWrist
- **Games**: FarmVille/Zynga, OMGPOP, Call of duty
- New services: Uber (taxi/limo), Zillow (real estate)

# Conclusions



- The Cloud is real
- The Cloud is big and getting bigger
- The Cloud was created by start-up technologies
- The Cloud provides lots of opportunities for new start-ups
- The Personal Cloud will be the biggest one

# Thank you!

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