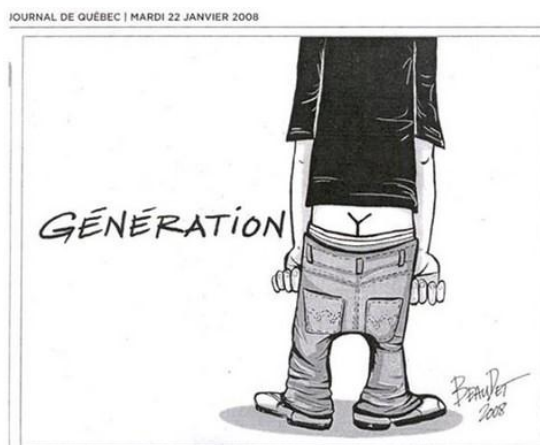


Cloud Leadership Forum 2011
Santa Clara, CA
June 20-21, 2011
and
GigaOm Structure 2011
San Francisco, CA
June 22-23, 2011

Executive Summary

Cloud Computing (CC), a baby couple of years ago, is now a rebel-rousing teenager and will grow to be a mature adult in a couple of years. It will radically change the very way IT has been ruling the enterprise. BYOD (Bring Your Own Device) will result in IT being either forced to change its traditional way of thinking or made irrelevant by Gen Y.



Details

There were early cloud computing (CC) adapters last year; now, CC has become mainstream and there are more real-world players in CC. What will cloud be when it grows up? A thunder storm.

According to IDC, there are 12 “big things” you need to know on the road to cloud:

1. *Cloud's about much more than the cloud.*
It is the “Third Platform” for the IT industry and is growing, following the mainframe and client-server eras. Millions of apps will be built on it. It's a mash-up of mobile devices, eHealth, eGov, Big Data/analytics, and more.
2. *Today's converged IT solutions aren't the endpoint of your data center transformation.*
Shared cache drives the next-generation datacenter with large in-memory databases (IMDBs).
3. *“Bring your own license” means real deployment choice.*
Current software end-user license agreements are primary obstacles to greater cloud use. CC lowers the cost barrier for service providers (SPs) to offer hosting services for major apps (Microsoft, Oracle, SAP) and eases audit/compliance requirements.
4. *Reorient IT around services.*
Architecture will move beyond the firewall. Development delivers services, not apps. Vendors will build digital supply chains. IT will be sourcing complex cloud services. Fifty-two percent of companies will have clouds services within the year.
5. *Public cloud will be more important than private.*
Markets always follow solutions, according IDC's Frank Gens' Law. Developers are voting with their

feet for the Public Cloud. Eighty percent of new enterprise apps will be developed for cloud in 2011. About 20 percent of 2015 spending on enterprise apps will be on the cloud model.

6. *Big Data: Cloud SPs grease the skids.*
9.8 Exabytes of hard-disk drive capacity was purchased directly by cloud SPs in 2010. Cloud SPs have multiple roles in today's Big Data ecosystem. Big Data services must be part of your cloud supplier's portfolio.
7. *IT organizations will become clouds service brokers.*
Ninety percent of 2010 cloud survey responders said cloud is extremely/very important for their IT organizations to be involved in pre-sale/sale/purchase of SaaS.
8. *Disruptive technology disrupts workforce.*
Cloud impacts IT professionals because technology roles are commoditized; creativity shifts from build to buy. Where's the next-gen IT workforce? Business knowledge is still in demand, new roles and skills are needed; there will be gaps in attracting college graduates.
9. *Over one-third of your key vendors will be "WikiTrivia," (meaning they will be history).*
Twenty-five years ago, vendors faced a similar transition, to the "Second Platform". Think of Cullinet, DEC, and Wang vis-à-vis EMC, PCs Limited (became Dell), and SAP; vendor disruption is coming.
10. *Public Cloud: Even IaaS will go vertical.*
Forty-one percent of U. S. enterprises are or will be implementing intelligent industry solutions. Industries are digitizing; look for a systems integrator with targeted solution, but beware of "faux" offerings. On the positive side, Technicolor is totally moving to digital creation and distribution of movies.
11. *You can't avoid the personal cloud.*
Twenty percent of PCs, 50 percent of smartphones, and 80 percent of tablets in the workplace today are employee-owned and liable. Bringing your own desktops, devices, apps, and content are commonplace. Personal and work lives meet in data, location, social graphing, network preferences, and directory. Is IT prepared for this onslaught?
12. *Cloud services enable a focus on innovation.*
CIOs hope to spend 54 percent of their time driving business innovation, off-loading commodity services.

Clouds can't be planned, funded, or executed without ties to mobility, social, big data, and industry transformation. IT is being dis-intermediated and the risks of poor cloud governance are dire. Make sure you have a *business strategy*, not a *cloud strategy*. In other words, don't blindly fall into a cloud trap, ensure it makes sense for your IT environment.

There are two clouds that when combined provide a big threat to the established practices and controls of the IT department. The first, the private cloud, lacks two important attributes of cloud computing. First, you have to buy it up front—instead of paying for it as you go, and second, the adoption of cloud means almost no IT involvement. The second kind of kind of cloud is the "Cloud in your pocket"—the one that powers your smartphone or tablet.

CIOs say make datacenter more like a cloud today—economics, elasticity, and pay-as-you-go. Cloud is creative destruction of complexity, according to Gartner's Cameron Haight. The rate at which cloud will be adopted will be the rate at which people will be retired. VMware/Cisco/EMC's VCE is Very Costly Engineers, said Citrix's outgoing CTO Simon Crosby. (He is joining [Bromium](#), a startup he co-founded with Ian Pratt and Gaurav Banga.) This model is untenable. Believe in hybrid cloud. Cloud is more than just VMs. [Internet Initiative Japan](#) has 50,000 servers, and no sysadmins.

The challenge we have with CC is, "How do we deliver enterprise apps to employees regardless of where they are?", for which we need a service delivery fabric. Security concerns about the cloud are often unfounded. An automobile is 28 times more dangerous than a plane, yet billions of drive it around the world every day. For private cloud look at OpenStack that will power Rackspace and other SPs. WikiLeaks was good for cloud and taught us good lessons.

The Amazon public cloud accounts for an estimated 40 percent of the total public cloud market. Intel's own IT department—with about 75,000 servers worldwide—is transforming its enterprise environment from a traditional infrastructure to a cloud-based service.

Although some skeptics tend to write it off as a doubtful CC vendor, Microsoft remains a giant in the enterprise software space and is a leader in both public and private cloud computing. Its existing customer channels will be influential in shaping the course of how this trend will be realized.

Open-source software has democratized innovation and is a stub for other subsequent innovations. But is there a revenue model behind this movement or should there be a profit motive? OpenStack and Cloud Foundry will put this to test.

The NoSQL and Memcached markets are exploding with tens of thousands of deployments. Customers are starting to feel the "heat" in both power and infrastructure costs. Tileria, with 100+ cores, and Couchbase claim to provide a turnkey solution that cuts Memcached and NoSQL costs by half using Tileria-based servers that are 5 times more power efficient than x86 servers.

Is the Cloud frothy or a bubble?

Silicon Valley's finest are riding high again with their investments into the cloud space. But how long will it last? Agile startups have left the big vendors aside; cloud will happen much faster; and starting a social networking company has become a lot easier. But, how many social networking vendors do we need? Didn't we have enough online pet-food and grocery vendors during the dot-bomb?

For a few years, cloud-based storage has been an ideal solution for backing up enterprise data, but a new breed of startups is trying to convince businesses to move their primary data into the cloud. But the real question is, "Can the cloud meet the performance, security, and cost requirements that businesses place on primary storage systems and what it will take to make the cloud an appealing option?"

The telcos are coming, the telcos are coming!

2011 will be an interesting year for telcos. Savvis and Terremark were bought by telcos who hope to deliver computing as a utility service for enterprises. But they will butt heads against established systems vendors (HP, IBM, and *maybe* Cisco) and SIs. Besides, telcos can talk the enterprise talk, can walk the enterprise walk, but can they kick the enterprise kick?

Cloud Databases

Managing data in the cloud is one of the biggest challenges that remain. The cloud introduces new challenges, such as elasticity, geographic distribution, and multi-tenancy, while the need for database scalability, reliability, and performance still exist. This has led to a wave of new solutions, including database-as-a-service (DaaS) offerings, which requires a definition of what a "true" cloud database is and the associated challenges of managing data in a cloud environment. Some vendors claim they can easily move, store, and back up data from one country to another, totally overlooking the fact that many countries, especially in Asia and Europe have stringent laws as to where data can reside.

Open Clouds, Closed Minds?

Intel last year emphasized the need for interoperability and standards in CC. We have since had Cloud Factory, Open Data Center Alliance, OpenStack, Open Compute Project, and Deltacloud, the DMTF's cloud incubator just to name a few. What will survive in the long run is anybody's guess. Maybe the deep-pocket vendors will drive their agenda. Remember the Golden Rule: People who have the gold make the rule! A few

years ago there was a lot of noise about DCML—Data Center Makeup Language. Now, it looks like Dead Center Markup Language!

Tidbits about Yahoo!

- Has 680 million users worldwide and 200+ petabytes of data
- Handles 100 billion events per day, 1.5 million requests per second, and 11 billion page impressions per month
- Manages 400,000 servers that include 42,000 Hadoop servers (Rackspace has 70,000 servers)
- Believes in caching, proxying, load balancing, content and advertising optimization and delivery, image/video storage and delivery, machine learning, IaaS, KaaS (Knowledge) PaaS, and SaaS
- Believes the future lies in data in the cloud, Big Data, private clouds, automation, cloud fabrics, and open source

Miscellany

- Solid state flash memory vendors claim they have achieved cost-parity with 15,000 RPM disks today, promising 90% lower energy and cooling costs with 10x greater performance—all at a competitive cost per usable terabyte.
- SeaMicro claimed its servers use $\frac{1}{4}$ the power and take $\frac{1}{4}$ the space of traditional servers.
- High-density server blades, Atom-based machines, servers using cell phone chips, and specialty processors using hundreds of cores *may* result in revolutionary innovations.