CloudBeat 2011
Redwood Shores, CA
November 30 – December 1, 2011
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IT Newswire

Executive Summary

Cloud Computing (CC) shows no signs of slowing down. With the proliferation of smartphones, tablets, other mobile devices, telecommuting, and virtual teams, CC is morphing into Cloud Commuting. Some small companies have completely moved to the cloud; others have moved some apps, such as email to the cloud; yet others are still skeptical about CC and fear a Cloud Bubble 2.0.

This report is based on public presentations and discussions at the event and our private one-on-one interviews with the speakers.

Fireside Chats

1. Adam Selipsky, VP Marketing, Sales, Product Management & Support, Amazon Web Services

There were a lot questions and discussions about Amazon's CC strategy and its recent hiccups. Following is a sanitized version of the discussions and Q&As.

Can organizations trust Amazon for their core apps?
Look at our track record, we have been offering S3 for over five years. Many of our customers delve into SAS 70, FISMA, ITIL, etc., we'll help them. We have learned lessons from the Netflix downtime earlier this year and have built an infrastructure that is instantly scalable to multiple locations. We take any downtime very seriously. We publish findings to the public.

How about security? Why can't Amazon be more open about security?
Amazon Web Services (AWS) has a strong record in security, but can't quantify it. Farmers Insurance Group is a good example of AWS customers. They have put documents that require electronic signatures on the cloud. TrendMicro provides security at the application level. (We believe the speaker skirted the question and failed to give a satisfactory answer.)

A major European game player has moved from AWS to a Eucalyptus-based solution. What is your take?
We realize customers have a choice, but AWS is the most reliable, cost-effective solution. InterContinental Hotels Group (parent company of Crowne Plaza, Holiday Inn, Holiday Inn Express, InterContinental, etc.) is moving many of its core apps to AWS.

Will Amazon support IEEE's standards initiatives?
Standards bodies move too slowly and our customers can't wait that long.

What is your general take on CC?
Larry Ellison says multi-tenancy is a security risk. There is still a lot of skepticism with cloud because it is new. Big Data will be big in 2012 with large and large data sets to be handled and we believe much of it will move to the cloud.

2. Lew Moorman, CSO & President, Cloud, Rackspace

Initially launched as collaboration between Rackspace and NASA, OpenStack was certainly not the first attempt to build open source cloud infrastructure. But less than 18 months after it was first announced, OpenStack continues to command much of the mindshare and is well on the way to becoming an independent

Foundation supported by over 100 technology companies. The speaker justified Rackspace's rationale for giving away its Intellectual Property, and the ways in which his company – and others – must adapt to a market in which so many differentiators are being commoditized or given away. He also contended that Eucalyptus is neither truly open source and nor totally free, whereas OpenStack is both.

3. Byron Sebastian, Heroku GM & Executive VP, Platforms, Salesforce

PaaS is in full bloom, transforming from a niche cloud arena to a mature and viable one practically overnight. Byron has been an advocate for cloud platform services since the market's inception. He discussed the opportunities presented by cloud platforms for both developers and enterprises. Specifically, he shared insights around: 1) which applications are best suited for cloud platforms, and how this may change over the next 3-5 years; 2) key drivers for the rapid growth of cloud platform adoption and whether that differs for start-ups versus more established organizations; and 3) what ecosystems are beginning to develop around cloud platforms and how this will impact adoption moving forward. In his current role, Byron oversees two distinct platforms – developer-friendly Heroku and productivity-focused Force.com – and he shared examples of when and how organizations are deploying each of them.

Whereas salesforce.com says, "No Software," Heroku says, "Forget Servers."

It has been an exciting year for PaaS and synergy between Heroku and CRM been great, said the speaker. Most developers have businesses and vice versa. But developers usually smell, but businesses don't, he continued. A compelling reason to move to PaaS is it enables you to develop apps fast and make them interact with social network software and be agile. There is still a huge opportunity for IaaS vendors. Clouds need to be public to be useful to all.

4. Aaron Levie, Co-Founder and CEO, Box.Net

Aaron discussed how his company brought its cloud content management solution to 18,000 globally distributed P&G employees. Box now empowers P&G employees to easily share and access information across devices, without any P&G maintenance or upgrades. Aaron described why this deployment marked a major turning point for Box and, more broadly, cloud adoption in the enterprise. We have covered Box.net in a Synopsis we published on Enterprise 2.0 last month.

5. Javier Soltero, CTO, SaaS & Application Services, VMware

The rise of cloud-based SaaS applications from Evernote to Salesforce causes problems within the enterprise. IT staff struggle to facilitate some access to back-end systems while maintaining the necessary security and accountability. At the same time, Bring Your Own Device (BYOD) policies intended to lower enterprise costs and raise employee satisfaction grapple with the practicalities of delivering simple, secure, auditable access to corporate assets. Javier dwelt on these issues, and the role virtualization plays in addressing these.

6. Adrian Cockcroft, Director, Architecture – Cloud Systems, Netflix

Despite its recent outages, missteps, and steep decline in its stock price, Netflix is often held up as the poster child of cloud adoption and, specifically, the adoption of AWS. While the technical discussion about what Netflix has done and currently is doing has been the subject of many presentations, less well known are the business drivers for the move to the cloud. Adrian discussed the trade-off between cost and agility and the business risk profile that Netflix sees comparing on-premise with cloud. Adrian also gave an inside perspective on international expansion, OpenStack, and whether or not anyone can catch AWS.

Adrian joined Netflix in 2007. In 2008 they started streaming through the Roku box. This was a startup-like pivot from a billion dollar company. Netflix IT started internally and then much of it moved to AWS. In 2009 the streaming business beat the DVD business. In 2011 they are moving most from data center (DC) to AWS, with no active connection to the DC. Cloud has become the production platform, while DC is the backup. DC has 1,000 machines, while the cloud has about 10,000. Netflix is still a small fish in Amazon's big pond. In 2010 Netflix entered Canada, this year they are launching in Latin America, next year in the UK and Ireland.

Observations
- Transatlantic latency is satisfactory.
- Assume anything can go wrong at any time, so we have stateless machines. All data is triplicated, while legacy data was in large cages.
- AWS dominates the public cloud space.
- Managing AWS and Netflix is like riding two horses.

- If machine utilization is over 60%, give me more. If it is under 30%, take away some.
- How do you design for failure? Make it resilient. "We were inspired by the book *Release It* by Michael Nygard which essentially said 'Feature complete' is not the same as 'production ready.'"
- Most of the money spent by Facebook, twitter, and others is on infrastructure, whereas Netflix spends on postage and shipping and handling.
- Netflix is building on the Java platform to make it portable. "We are deeply embedded into AWS and don't see moving away from them anytime soon. Others are not industrial strength. Most of Netflix cloud software is open source, and we use Akamai to deliver content to customers."

7. Steve Philpott, CIO, Amylin Pharmaceuticals

Faced with aging infrastructure and expecting significant budget pressures, Amylin embraced cloud computing to ensure that IT kept up with the needs of the business. Many other companies have done the same, but the foundations for this shift were laid at Amylin as far back as 2008. Steve discussed the work of the change management needed across the business to support the shift. He delved deeply into the analysis his team continues to conduct to help them understand where different applications should most effectively run.

Although pharmas are not known for IT innovation, Amylin started CC in 2008. Steve was inspired by the book *The New Age of Innovation*, which said R = G, resource = global, and led the company to get rid of its NIH mentality. "Cloud is one of the most bastardized words in the industry. We have been doing cloud, which is nothing but mainframe computing, and virtualization since early 90s, we just have better technology and buy-in now," said Steve. He continued, "We had SaaS, StaaS, and IaaS as part of Amylin Virtual Data Center back in 2008. We want IT to be experts in data management and business process management. We use Nirvanix, AWS, and Workday. The entire IT has become 80 services. We will be paying for services and not on hardware and software."

8. Patrick Scaglia, VP and CTO of Cloud Services and Applications, HP

"That HP is a player in CC is a well-kept secret. We haven't done proper messaging," said Patrick. (Is this anything new? HP has in the past tried to sell sushi as dead fish!) CC is a bit like mobility, it is all about applications for which we need building blocks. Does openness matter to you? Yes, it does, because customers don't want lock-in. PaaS implies IaaS. Why is HP different? "We do open source, build an ecosystem, and provide portability by standardization."

Case Studies
1. Finding the Sweet Spot in the Cloud, Allan Leinwand, CTO, Infrastructure Engineering, Zynga

Some companies go all-in on the public cloud, while others find reasons to keep everything locked up inside data centers that they control. Zynga, the world's leading social game developer is a little different. Initially dependent upon traditional, hosted infrastructure, Zynga moved to AWS as it experienced explosive growth. However, as its needs changed, Zynga developed its own private cloud, dubbed zCloud, and distributed some of its computing on dedicated infrastructure. Allan explained the rationale his company adopted in steering this course from hosting to a hybrid public and private.

Observations

- Zynga is in quiet mode prior to its much-anticipated IPO.
- Founded in 2007, Zynga initially deployed servers in cages, but FarmVille's growth demanded AWS, and it was renting what it couldn't own.
- Initially built a copy of AWS internally, and then moved to AWS. When it comes to meeting huge user demands, its philosophy was *Own the base, rent the spike*.
- We make the complex as simple as possible. Our games are developed by over 2,000 developers in India, China, Japan, UK, US, and elsewhere. Since all games have to be reliable and available 24x7x365, serving 232 million players every month, we can deploy 1,000 servers a day. CastleVille alone has 18 million users.
- Mobile games require a lot from the end users, the last mile is crucial.
- Understand the stress apps put on the infrastructure.
- We have added TenCent and Google+ recently which brings additional scalability challenges.
- The Great China Firewall was a challenge.
- Zynga runs inside of the social network software.
- What lessons were learned?
  - Know your app and how it is deployed – some are CPU bound, some are I/O bound, some are storage bound. How do these affect performance and reliability?
  - Hire innovative people, even if they are expensive.
  - Although we believe in public clouds, embrace what meets your needs: We love four-door sedans, but you may want a Winnebago for heavy loads or a sports car for speed and performance. Leverage public cloud and use it in a way to meet your business needs, use hybrid for others.

2. Thomas Kelly, Enterprise Architect for Cloud Services, Best Buy

Like a lot of enterprises, Best Buy found that its developers were routing around corporate IT in order to use storage and applications in the cloud. Rather than ban this, or look the other way, Best Buy worked to find effective ways to exploit the benefits of both cloud and on-premise infrastructure. Developers retained the flexibility that they'd gone outside the firewall to look for, and Best Buy was able to ensure that IT policies and procedures were adhered to, delivering clear benefits to all concerned. BestBuy's adoption of cloud was driven by spiky loads: May is not like November, when the Black Friday business could be ten times a normal day's. How do we do capacity planning? CC comes along and all of a sudden we could scale up and down as needed.

Observations

- That which is not blessed by the Architecture Board, you do in stealth mode, with absolutely no governance. We never got caught. (We believe this is risky to a publicly held company, with little regard to GRC.)
- Getting a VPN connection from one data center to another takes weeks. We just said, 'Heck with it' and proceeded forward.
- We are not going to CC on a project basis, but will develop an entire infrastructure to deliver services.
- Anything without governance could lead to disaster. BB has 1,400 stores worldwide. What if we bring all apps into cloud with governance?
- You can use any app that you need as long as it is best of breed.
- Managing the infrastructure we have built has become more difficult than the problems we are trying to solve.
- Cloud has to be an extension of your DC.

3. Joe Payne, CEO, Eloqua

Eloqua has achieved a 54% CAGR in the last five years by using the cloud to manage the rapid growth of their business. Eloqua uses NetSuite for its global accounting and time management; salesforce.com for CRM, Service Cloud, and SFA; Successfactors for performance reviews; Taleo for recruiting; Cornerstone Ondemand for training/education; Echosign for contract processing; ADP for payroll; github for software version control; Adobe Connect and Citrix Online for web conferencing; On24 for live web events; box.net for document collaboration; cvent for event planning; and Eloqua for marketing automation and revenue performance

management. These SaaS products enable Eloqua to have access to great software, with fast time to value, at affordable prices. These SaaS offerings are all department enabled — thus allowing Eloqua to maintain a small IT staff. The next generation of SaaS products will allow collaboration between applications with no IT or expensive integration projects required and Mobile access and Social Media integration. This next generation is called SaaS 2.0.

Eloqua looked at Great Plains (GP) and NetSuite (NS), but the decision was a no-brainer, and picked NS, at one-third the cost of GP. Managing NS is easy, even while growing at 100%. Eloqua is currently running Exchange, but moving to Google mailbox next year.

Observations
- Buy as much in the cloud as possible.
- Just because someone is in the cloud doesn't mean it is a viable business.
- We buy from vendors that we feel are viable – Adobe, ADP, Citrix, salesforce.com...
- In SaaS your customers are future revenue generators. "I spend more time with prospects than I do with customers."
- Our entire focus is to make our customers successful.
- Even in CC, cost of sale is high, and most SaaS vendors lose money in the first year. SaaS gives you flexibility, unlike lock-in with traditional software. You just can't tell Oracle, "Hey, we are not paying you maintenance."

4. **Michaela Drummond, Information Management & Technology Practitioner, UK Meteorological Office**

The Met Office, part of the Ministry of Defence, is the UK's National Weather Service. Employing more than 1,800 people around the world, it has a long history of weather forecasting and has been working in the area of climate change for the more than two decades.

When faced with the challenge of collaborating on scientific documents with colleagues around the world and working more effectively with team members, other UK government departments, partners and stakeholders, the Met Office turned to Huddle. It wasn't long before Huddle had replaced SharePoint for project management, task management, and file sharing. Huddle is now used by 70% of central government departments. Being cloud-based, Huddle enables the Met Office to support mobile working so that staff can securely edit and comment on documents on the move. Files can also be accessed securely on and off site to facilitate training. The speaker discussed how the cloud has played a vital role in the organization's internal and external communications with teams working with the Rwanda Meteorological Service.

5. **Dick Escue, Senior VP & CIO RehabCare Group**

RehabCare is a health-services company that was recently acquired by $5 billion publicly held company Kindred Healthcare. It has 19,000 employees, with just 52 in IT. While IT spending was in line with industry averages, Dick knew he could get more bang for his buck. RehabCare ripped out its legacy system to enable mobile applications for its 10,000 mobile workers. Escue believes that the Socialization of IT is even more inevitable than the Consumerization of IT.

Observations
- Uses Apple laptops and PCs, iPhone, iPad, salesforce.com, and Google Apps.
- What made you embrace CC? Pure profit; in a publicly held company gross margins is everything.
- The happiest day was when Apple started supporting Exchange so people could use Outlook.
- Advice to IT: When it comes to your end users, don't be a 'No' guy, be a 'Knowhow' guy.
- After the CEO had the first weekend with iPhone, it changed the company IT strategy. He came to work on Monday and mandated enterprise-wide adoption of iPhone and Apple. Of course, there are still bean counters with keyboards, large monitors, and their Excel spreadsheets.
- From 2009 to 2010, there was a 92% reduction in broken devices, because end users were in love with their Apple devices and took care of them. MobileIron created early apps for the iPhone.
- User experience should be IT's top priority. Microsoft apps are very frustrating.
- Google Apps at $50 per user per year made sense; their use was economically driven. Economics and user experience drove the adoption.

- IT spending in healthcare is about 3.2% of revenue; at RehabCare it was 1.2%.
- IT doesn't have to be a black hole; it overcame GRC and HIPAA fears.
- Cloud turned IT from a fixed-cost to a variable-cost entity.

Miscellaneous
Business Freemium Application
SaaS is the big disruptor in the business software business, but there's a flurry of business applications that are free for most users. These services are disrupting paid SaaS offerings and tapping into viral referral models that enable them to grow exponentially. Is it possible to make money with this approach? Will enterprise customers allow workers to use free software for mission critical business processes?

2012: The Year of Cloud Commuting
2011 has seen the convergence of several technological advances with an acceptance of new ways of work, all culminating in a new trend dubbed "cloud commuting". Phones and tablets have increased their functionality significantly, while maintaining ease of use, all at low prices and with solid vendor eco-systems. This includes applications for just about anything (including productivity apps, print-from-anywhere services, or tablet BI tools). Add to that the advancements made in cloud services from file sharing to location-based mobile enterprise solutions and just about every software vendor. Combine this with mass acceptance and adoption of a mobile workforce, whether it's simply working from the road, or fully telecommuting, and you have the ingredients for a huge new trend, cloud commuting. 2012 will be the year of Cloud Commuting, as people work from their homes in virtually any city or even any country.

Cloud Computing vs. Mainframe Computing
We had a very lively discussion with a CIO, not cited above and who wishes to remain anonymous, about these topics. Following is a paraphrased version of his/her views.

Look, I came from a mainframe world, but I am not a Luddite. But this whole scenario of CC and virtualization amuses me, makes me feel at home, and it is back to the future. We used to call it mainframe, green screen, and service bureaus, and we were a lot more secure. All that has changed is that we have much better bandwidth and sexier GUI. As for virtualization, IBM wrote the book on it over three decades ago. We are selectively embracing CC not because of the hype, but only where it makes sense, and will never move our core apps to the cloud. They are our crown jewels and what set us apart from our competitors.

'Post-PC' Era
We heard this quiet a few times and, frankly, we believe the news of the death of the PC is highly exaggerated. Smartphones are great, tablets are sexy, but you get your real work done with PCs – granted tablets will eventually get there. Tablets are definitely killing the netbook market. Larry Ellison and Scott McNealy predicted the death of the PC in late 90s; today, the PC is still alive and kicking. In fact, IDC predicts a decent growth of the PC market through 2015 (see graphic below).
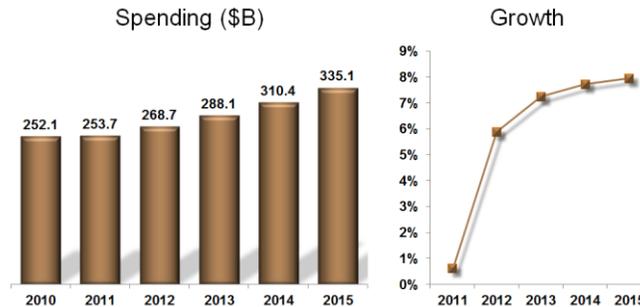
Source: IDC's *Worldwide Black Book Query Tool, Version 02, 2011* (IDC #229654, August 2011)

Innovation Showdown
Ten companies were chosen from a pool of over 70 to judge whose product/service is leveraging the cloud in the most disruptive way. Each had four minutes to showcase their technologies.

1. **Gigaspaces** lets you deploy any app your way on any cloud, but millions of apps simply don't fit. Very impressive. GTM strategy is a freemium model.

2. **myERP** believes business apps are in the Stone Age and one app is all that is needed to run your entire business. (Of course, this is a stretch.) It is ERP in a single URL. You don't need to learn myERP, myERP learns you. The software is free for up to two users. "What is your differentiator vis-à-vis NetSuite and Workday?" "Our target is 1-20 employees and we have 45,000 accounts in 140 countries."

3. **OfficeDrop** offers document scan, sync, search, and share in the cloud. One customer is **Unique Cleaning Service** in Atlanta; had 30,000 unit sales in 2011, and expects six million in 2012, and 35 million in 2013 through OEM sales. Freemium model, $10 per user per month, OEM pricing is different.

4. **Oxygen Cloud** gives easy access to users' work no matter if they are on their iPad, iPhone, Android device or plain old Windows or Mac laptop. Oxygen encrypts and synchronizes all their files. The protection extends all the way into users' devices, so the content is always safe, even if they lose their device(s). It has half a dozen large customers, freemium model and a subscription model for enterprises.

5. **Talkdesk** lets you create a call center with a browser; product in beta now; 400 companies waiting in US, UK, and Canada.

6. **VirtualSharp Software** provides next-gen disaster recovery solutions through DR Orchestration, has zero footprint (no software install is required), is fully automated.; assured recovery to cloud with role-based access; cost point significantly lower than today's costs; self-sign-up, enables recovery as a service.

7. **Visier** offers business analytics as a service – instant, complete, powerful. Visier Workforce Analytics, guides HR on who to hire, who to keep, and who to fire based on personal performance, meeting sales goals, etc.; no freemium model.

8. **Xiimo** offers software to SMBs for managing their day-to-day operations. If it were a country, the SMB revenue in the U. S. would be the world's third-largest economy. Xiimo is a free and easy-to-use marketing platform that empowers local businesses to thrive in an evolving consumer ecosystem. Xiimo enables businesses across growing global markets to publish local promotions, accept mobile payments, participate in loyalty programs and benefit from smart analytics.

9. **Zadara Storage** offers enterprise-class storage in private clouds through its Virtual Private Storage Array product (VPSA™), which is an iSCSI storage array in the cloud, connected to your Cloud servers. Each VPSA has dual controllers, dedicated drives and your choice of SSD, SAS or SATA drives. You can manage the VPSA in the same way you manage your SAN array in your own datacenter. Zapata won award as the best innovation vendor.

10. **VeaMea** didn't show up.

Conclusions

The cloud computing case studies were informative and well received. All sessions, except for those by the 10 finalists, were either panel sessions or fireside chats, with no PowerPoint presentations, Thank Heavens! As Vineet Jain of Egnyte, a hybrid cloud storage vendor, rightly noted, there is a lot of hype about both public and private clouds, and startups with two engineers with no sustained business model are being funded insanely. Valuations are sky-high. Sure, Facebook is a great company, but is it worth $100 billion?

Logistically, for a first event of its kind sponsored by VentureBeat, we believe the event was a success. However, we also found the moderators' discussions ran too long, leaving little or no time for audience questions.

It is clear that the cloud is here to stay and this is not some rainy day type of event – no pun intended. Unlike previous hot new things, there appeared to be a serious business side to cloud applications at the conference. We think that while it is too soon to dispose of your Microsoft software, productivity applications that are desk-heavy will be migrated to the cloud, as Microsoft is attempting to do with its Office 365 offerings.

The key technological differentiator for us, and this was neither on display nor fully discussed, is how applications will be re-architected. For many system architects, CC is slightly reminiscent of two- and three-tier computing from the 90s and time-sharing from the 60s. We need to understand what the intended footprint will be in the mind of the provider and, from that, what is the security policy for applications and data. Based on our discussions, it is abundantly clear that the industry has some work to do in the areas of application and data security and user privacy.