



INTO THE CRYSTAL BALL: Looking Out At the Cloud in 3 Years Time

The Cloud is confusing... well it can be, and that's where CloudU™ comes in. CloudU is a comprehensive Cloud Computing training and education curriculum developed by industry analyst Ben Kepes. Whether you read a single whitepaper, watch a dozen webinars, or go all in and earn the CloudU Certificate, you'll learn a lot, gain new skills and boost your resume.

Enroll in CloudU today at www.rackspaceclouduniversity.com



Table of Contents

Introduction	1
Revolution or Evolution?	2
Ubiquity and Commodity – or Maybe Not	4
Economics and Business Issues in the Cloud– Cheaper, Faster, Better?	6
The Tyranny of SLAs– A Thing of the Past?	7
The Rise of the Brokers and the Open Standards that Empowers Them	8
The End of the Cloud Security Conundrum	11
Maturing Technology – Excitement for the Geeks	12
The State of the Nation	14
Conclusion	15
About Diversity Analysis	16
About Rackspace	17

Introduction

Bill Gates, the Founder of Microsoft, is often quoted as saying that “We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten.” While this contention is undoubtedly true in “normal” times, the pace of innovation in the Cloud is so fast that it is hard to overestimate the impact that it will have in the short term, especially for the most nimble companies who choose to adopt it. Still in deference to Bill, we decided to look out over the next three years and what the Cloud will look like as we celebrate the conclusion of the first year of CloudU.

Rather than simply come up with a list of our own predictions, we decided to go out to the large and fast growing CloudU community and elicit contributions from industry participants, IT professionals and business owners via multiple channels. We are indebted to those who engaged in the conversation on the LinkedIn CloudU Group <insert endnote – <http://linkd.in/rwPTkE>>, the focus.com question page <inset endnote – <http://www.focus.com/questions/what-are-top-10-things-about-cloud-well-all-take-granted-3/>> and on Twitter. One of the themes that emerged in these community discussions is that not everyone agrees on what the Cloud will become, or even what it is. Therefore, this look into the future will present two sides to every coin. It is our hope that in exploring some of the most salient debates around Cloud Computing, that we will all be able to make our own decisions about how to take advantage of this collection of rapidly changing technologies we call the “Cloud”.

Revolution or Evolution?

While not specifically a look to future innovations, it is important to frame Cloud Computing within the broader IT industry in order to accurately assess its importance going forward– if it's just a fad, investment should be light, if it's the real deal, better get on board fast!

A theme we have been espousing since the first CloudU paper¹ is that Cloud Computing constitutes a revolution for IT. We detailed how this revolution was being enabled by changes of both a technology and a business nature. These changes are;

- Virtualization – The ability to increase computing efficiency
- Democratization of Computing – Bringing enterprise scale infrastructure to small and medium businesses
- Scalability and Fast Provisioning – Bringing web scale IT at a rapid pace
- Commoditization of Infrastructure – Enabling IT to focus on the strategic aspects of its role

This very contention of revolution versus evolution became a real topic for debate on the CloudU LinkedIn Group² with opinions split over our argument that the Cloud is indeed a revolution. Coming out on the side of mere evolution was Andrew Tokeley,³ himself the Product Manager for a Cloud vendor. Tokeley contended that;

“ If by revolution we mean a more dramatic change... then I'd say the only revolution is in people's awareness of what “the Cloud” means. This is largely driven by the wider media's comprehension of the term and its implications. The technology and use of the Cloud is far more evolutionary in my mind – we've been in the Cloud and exploring it for a while now.”

However concurring with our view of the state of things, Sholto McPherson⁴ a journalist covering the space, argued that;

“ ...the technology behind Cloud Computing could be described as an evolutionary development but it will have a revolutionary impact on business and society.”

In our view, both are correct. Tokeley correctly points out the the technology foundations for the Cloud– virtualization, SaaS and more– have been around for some time. But it is how this technology’s widespread adoption is enabling massive changes in how businesses are organized that constitutes a revolution. Technology is only one part of the revolution.

Ubiquity and Commodity – or Maybe Not

When asked what the top things that we would take for granted about Cloud in the next three years, the CloudU community was particularly vocal. One of the most compelling predictions was made very succinctly by noted Cloud Computing commentator and thought leader Sam Johnston.⁵ Johnston said quite simply that;

“Cloud services will achieve “dial tone” availability by deploying global, geographically distributed and redundant infrastructure.”

This is a view which aligns with our own perspective that Cloud Computing indeed commoditizes IT services– who among us believes that the call quality provided by any of the major telcos is better or worse than any other. Johnston’s view however was not unanimously agreed with. In particular Eric Lenington⁶ had much to contribute saying, in part that;

“I hope that is the case, but I feel it will be difficult to achieve. To your point, people got so accustomed to reliable dial tone that no one even thought to worry about what was behind the dial tone... But keep in mind that the presumed reliability of dial tone was largely due to one company that delivered on that promise of reliability over a very long period of time. For Cloud services in general to achieve that level of de–facto acceptance, it will take time and it will only happen if the Cloud providers deliver on that “dial tone” promise.”

Much of the conversation around whether or not Cloud will achieve this kind of commoditization rests on the discussion as to whether Cloud is in fact a utility. In another hotly discussed conversation⁷ there were a number of perspectives on this topic. Mike Maney⁸ brought up the real point of maintenance of utility resources saying that;

“One thing I don’t see in the utility analogies is the issue of infrastructure upkeep. Here in the States, there’s a growing concern about the health of the nation’s infrastructure–its highways, its power transmission. It’s partly why, I think, we’ve started to see a rise in the number of businesses and individuals taking infrastructure into their own hands through the use of things like solar or off–the–grid backup power generation. If we view Cloud as a utility, the

future upkeep and maintenance of the public part of it must be factored into the equation.”

Also having difficulty with the utility moniker, but for different reasons were Paul Wallbank⁹ and James Urquhart¹⁰ who said respectively;

“ I'd disagree Cloud services are a utility – the pipes, the Telco's and ISPs, are the utilities. Cloud services should be a value add that use those utilities.”

And;

“ In short, there is one key difference between the electric utility industry and Cloud Computing: electricity ≠ data.

When you plug an appliance into a wall outlet, you don't care where the electricity actually came from (though you might “pay for” green electricity, you don't directly tap into the actual supply). An amp is an amp is an amp.

When you plug a computer into a network, you care *exactly* which data comes out of the wire. While the network itself is a common carrier, the product that matters is quite proprietary.”

We accept that the debate around commodity and utility is one that is fraught with semantic nuances, however for similar reasons to those underpinning our view that Cloud is a revolution; we believe that over time Cloud will tend towards becoming both a commodity and a utility in the sense that the technology provided by one company will be largely identical to that provided by another, although individual providers will continue to differentiate based on this like customer services, professional services and more.

Economics and Business Issues in the Cloud—Cheaper, Faster, Better?

A number of respondents pointed out the business related developments that Cloud users would enjoy over the next few years. Never one to shy away from taking a strong stance on issues, Sam Johnston¹¹ again contributed saying that;

“Cloud services will be far cheaper than legacy equivalents by deploying adequate (rather than excessive) redundancy and building resilience into software rather than hardware; most new software will be designed for Cloud rather than legacy architectures.”

While not disagreeing with this perspective outright, another noted Cloud commentator, Christian Reilly¹² countered by focusing on value rather than cost. He predicted that;

“Cloud services will be measured on value provided rather than costs saved.”

In part, some of these cost savings will be delivered through Johnston’s prediction of “good enough” infrastructure deployments but Adrian Cockcroft,¹³ Chief Cloud Architect from Netflix pointed out¹⁴ that in his view cost savings will be created because of the growing trend that;

“Big Public Clouds will go direct to hardware component suppliers, bypassing and undercutting the enterprise vendors.”

This whole debate about the economics of Cloud Computing (often called “Clouconomics”), a topic of a previous CloudU paper,¹⁵ is a highly complex area and one that we predict will continually evolve over the coming years.

The Tyranny of SLAs– A Thing of the Past?

Much discussion occurred in the various forward looking forums about Service Level Agreements (SLAs) in the Cloud Computing Space. Once again Sam Johnston came to the fore here predicting that;

“SLAs (which are bad for customers because they only cover a small fraction of the true cost of security — including availability — incidents, and bad for providers because they strip them of what little income they earn from providing the service) will be a thing of the past... you don't need an SLA when you have a proven track record of delivering “dial tone” availability.”

This view was further developed by Dan Young who contended that;

“...the concept of SLAs will fade from the enterprise psyche as we head towards a world where business applications are a) generally built on Cloud and b) available on any device over any medium. However, even today SLAs have no practical purpose and yet they exist. Why? And if we don't have SLAs won't sales and marketing departments just invent some other meaningless metric for customers to compare services?”

In terms of what might appear to replace SLAs, Paul Quickenden¹⁶ was hopeful that they would be rendered obsolete by something of much more fundamental importance;

“...reliability – in fact your average CIO (not even the worker) won't even know which applications and compute infrastructure are Cloud delivered and which aren't.”

We believe that SLAs are often unhelpful and ineffective tools that essentially act as a proxy for fundamental comfort in a technology delivery mechanism. On this SLA topic it seems that most commentators agree and that the near-term future will see the end of the SLA.

The Rise of the Brokers and the Open Standards that Empowers Them

One interesting topic of discussion around the business models of Cloud was that of the Cloud broker. Christian Reilly¹⁷ reiterated a theme he has espoused previously, that of the “Cloud Concierge”. He stated that;

“Cloud Concierge providers will have blossomed, peaked and stabilized with leaders like Equinix providing CIOs with an option-rich, trusted “service aggregation” partner.”

In his blog post¹⁸ of predictions for 2012, Geva Perry¹⁹ also spoke to the fact that commodities tend towards trading platforms. As he said;

“Financial Efficiency and Sophistication: Computing is a commodity, and every commodity ends up being traded, future-traded, brokered, arbitrated, speculated and manipulated with derivative instruments. The good: the market becomes very efficient. The bad: the market becomes complex and opaque. We are already seeing spot markets”

Boris Renski²⁰ also articulated this vision seeing the rise of;

“hosted Cloud service providers – hosting companies offering managed Cloud hosting.”

Renski sees that the commoditization of technology will result in vendor revenue coming from managed services on top of technology, rather than the technology itself.

This theme of commoditization was extended somewhat by David McGhee²¹ who foresees a “common marketplace” where Cloud services can be bought and sold. Of course, and as we pointed out in our Open Standards paper, this relies on some common standards for the way Cloud Computing resources are created

and deployed. These standards will enable these marketplaces to thrive. Sam Johnston²² once again strongly articulated this fact saying that;

“Open Cloud” will be advertised by providers and demanded by consumers, guaranteeing important freedoms for services in the same way that “Open Source” guarantees freedoms for products.”

In his own blog post of predictions for the year ahead,²³ Geva Perry contended that it is in fact too early for Cloud standards, he stated that;

“About two years ago there was a strong wave of interest and discussion about the need for Cloud standards. I wrote then, and still believe, it is too soon. But it is also inevitable. We will, however, see multiple competing standards.”

We share Perry’s concerns about standards being a potential impediment to innovation in the Cloud but also feel that standards offer significant benefits to the industry and as such should be encouraged.

This concept of different providers providing different flavours of Cloud Computing service was touched upon by Paul Quickenden²⁴ who said that;

“There will be different delivery models and we will have finally put to bed the debate about the ‘true Cloud’... it’s a horses for courses situation.”

None stated this as strongly as David Gentle²⁵ who said simply that;

“The word ‘mobile’ doesn’t mean anything – networks are ubiquitous, all devices are connected – wherever, whenever.”

This concept of effortless data transfer was mentioned, albeit in a different way by Nick Hamm.²⁶ In his case he was referring to the seamless access of applications regardless of device type. As he said;

“Device agnostic mobility – this will be an embedded attribute of all SaaS applications.”

With these marketplace predictions out of the way it is time to look at some barriers that exist to Cloud adoption today and how they will be solved.

The End of the Cloud Security Conundrum

Security in the Cloud is something we discussed at length in a previous CloudU paper,²⁷ indeed security is the often stated number one barrier to Cloud adoption, especially so when it comes to larger enterprises.

Our commentators predicted strong developments in this area. Nick Hamm²⁸ summed this prediction up by saying that;

“Security – this will no longer be the biggest objection about Cloud solutions”

Christian Reilly²⁹ felt that security was a major area for progress also. His vision called for a change so that;

“Security will be by policy, not by topology and there will be simple options for “securing the data, not the device” and hence allowing enterprises to live in the metropolitan area (Cloud) and not behind the castle and moat.”

Roger Jennings³⁰ best summed it up when he predicted that;

“Data in the Cloud [will be] more secure than in your terrestrial data centre.”

We also believe that the end of major concerns around Cloud security will come in the next few years. We note that many of these concerns are raised by legacy vendors who are fearful of the threat that Cloud raises to their revenue streams. In response to this many vendors seek to circulate fear, uncertainty and doubt about the validity and safety of Cloud Computing per se. We believe this dissemination of wrong information will finally cease in the next few years as people become more aware of what Cloud really is and the issues it raises, and does not raise, for their organization

Maturing Technology – Excitement for the Geeks

Looking at technology and sector developments in the Cloud Computing space, it is interesting to read the predictions that industry insiders have for the space. Geva Perry foresees a strong move up the stack in his 2012 Cloud predictions.³¹ Predicting that Platform as a Service (PaaS) will grow in importance, he predicts that;

“IaaS [will become] niche. In the long-run, IaaS doesn't make sense, except for a limited set of scenarios. All IaaS providers want to be PaaS when they grow up.”

While we agree that PaaS is indeed a significant part of the future of Cloud Computing, we wouldn't go so far as to discount pure Infrastructure as a Service (IaaS) as purely niche, indeed Perry himself speaks of one area that IaaS can prove valuable when he foresees the increasing importance of;

“Specialized Clouds: There are many dimensions to an application: the pattern of its workload; the government regulations it must adhere to; the geographic access to it; the programming language and framework it supports; the levels of security, performance and reliability it requires; and other more specialized requirements. It's not a one-size-fits-all world. At least, not always. There will be big generic Clouds, and then, many specialized clouds.”

James Urquhart,³² formerly of Citrix and now VP at up and coming Cloud governance vendor enStratus chimes in suggesting that there is more to base layer IaaS meets the eye. He suggests some possible areas of development by saying that;

“for application developers, networks will be about connectivity, with most application-specific Cloud services delivered from the edge. However, it will all be an illusion/abstraction.

The abstraction, however, is delivered on rich, innovative networking platforms that enable things like optimal geographic distribution of application components, auditing of network traffic across wide area networks, and a variety of security services with minimal impact on application design.”

Much of this rich platform that Urquhart talks about will be delivered with the aid of the components that truly enable components to work together, the

Application Programming Interface (API). Paul Quickenden³³ points to this when he states that;

“for the Clouderati they already take these [APIs] for granted, all those cool wonderful things you can do are a function of the APIs”

Of course to enable APIs to really prosper, we need to ensure that identity is handled seamlessly and Christian Reilly³⁴ speaks to this when he contends that one area for progress will be;

“Identity & Mobile Application (not Device) Management will be simple, configurable options on hardware platforms via accepted and adopted standards.”

With all of these specific predictions however it is worthwhile looking at where people see the existential questions heading over the next few years.

The State of the Nation

Finally our respondents gave us some “big picture” thoughts, some predictions of where the Cloud industry as a whole will be in a few years. Laura Schroeder³⁵ started off when she stated that;

“...in 10 years people will barely remember software upgrades. It’ll be like 8 track tapes; you kind of remember them but can’t imagine life without your tiny cellphone that doubles as an iPod, camera, browser, navigator, TV, game boy and email tool. People who talk about upgrades will sound like people who talk about punch cards, Neil Diamond and cars that didn’t auto-lock.”

As always there are those who don’t buy into this utopian ideal however and Simon Robb³⁶ fills this role when he says that;

“in 3 years most Enterprises will still be clinging on to their own hardware servers. If people can’t move off Windows XP then how in 3 years are they going to make it to the Cloud?”

Robb’s concerns are valid, and speak to the very nascent stage that Cloud Computing is at. However in our discussions with CloudU community members, Cloud Computing visionaries and IT professionals across the globe tend to be more positive about the potential and outlook for Cloud Computing. Undoubtedly there are some obstacles to overcome, and for sure we will stumble on the way, but if there is one thing that the past 12 months of CloudU activity has shown us it’s that Cloud is truly the way of the future.

We look forward to a Cloudy future and invite you to join us for the ride.

Conclusion

It is impossible to argue against the contention that Cloud is still an emerging trend. That said however the past 12 months have been a whirlwind of increasing awareness and adoption of the benefits that Cloud Computing can bring to an organization.

This increasing velocity gives us great hope for the next few years and leads us to believe that Cloud is in a good position today to delivery upon its promise for tomorrow. Undoubtedly there are challenges to overcome and some of those challenges will be more difficult than we currently envisage, but we are adamant the future will predominantly live in the Cloud, and that this change will deliver real benefits from both the technological and the business spectrum. 2011 has been an exciting year in the Cloud and we look forward to more excitement with CloudU in 2012.

About Diversity Analysis

Diversity Analysis is a broad spectrum consultancy specializing in SaaS, Cloud Computing and business strategy. Our research focuses on the trends in these areas with greater emphasis on technology, business strategies, mergers and acquisitions. The extensive experience of our analysts in the field and our closer interactions with both vendors and users of these technologies puts us in a unique position to understand their perspectives perfectly and, also, to offer our analysis to match their needs. Our analysts take a deep dive into the latest technological developments in the above mentioned areas. This, in turn, helps our clients stay ahead of the competition by taking advantage of these newer technologies and, also, by understanding any pitfalls they have to avoid.

Our Offerings: We offer both analysis and consultancy in the areas related to SaaS and Cloud Computing. Our focus is on technology, business strategy, mergers and acquisitions. Our methodology is structured as follows:

- Research Alerts
- Research Briefings
- Whitepapers
- Case Studies

We also participate in various conferences and are available for vendor briefings through Telephone and/or Voice Over IP.



About Rackspace

Rackspace® Hosting is the service leader in Cloud Computing, and a founder of OpenStack™, an open source Cloud platform. The San Antonio-based company provides Fanatical Support® to its customers, across a portfolio of IT services, including Managed Hosting and Cloud Computing. Rackspace has been recognized by Bloomberg BusinessWeek as a Top 100 Performing Technology Company and was featured on Fortune's list of 100 Best Companies to Work For. The company was also positioned in the Leaders Quadrant by Gartner Inc. in the "2010 Magic Quadrant for Cloud Infrastructure as a Service and Web Hosting." For more information, visit www.rackspace.com.



About the Author *Ben Kepes*

Ben Kepes is an analyst, an entrepreneur, a commentator and a business adviser. His business interests include a diverse range of industries from manufacturing to property to technology. As a technology commentator he has a broad presence both in the traditional media and extensively online. Ben covers the convergence of technology, mobile, ubiquity and agility, all enabled by the Cloud. His areas of interest extend to enterprise software, software integration, financial/accounting software, platforms and infrastructure as well as articulating technology simply for everyday users. More information on Ben and Diversity Limited can be found at <http://diversity.net.nz>

Endnotes

- [1] http://broadcast.rackspace.com/hosting_knowledge/whitepapers/Revolution_Not_Evolution-Whitepaper.pdf
- [2] <http://lnkd.in/7YPeQk>
- [3] <http://nz.linkedin.com/in/andrewtokeley>
- [4] <http://au.linkedin.com/in/sholtomacpherson>
- [5] <http://www.linkedin.com/in/samjohnston>
- [6] <http://www.focus.com/profiles/eric-lenington/public/>
- [7] <http://lnkd.in/H5CBhj>
- [8] <http://www.linkedin.com/in/mikemaney>
- [9] <http://au.linkedin.com/in/paulwallbank>
- [10] <http://www.linkedin.com/in/jurquhart>
- [11] <http://www.linkedin.com/in/samjohnston>
- [12] <http://www.linkedin.com/pub/christian-reilly/b/439/241>
- [13] <http://www.linkedin.com/in/adriancockcroft>
- [14] <http://lnkd.in/H5VbKQ>
- [15] http://broadcast.rackspace.com/hosting_knowledge/whitepapers/Cloudonomics-The_Economics_of_Cloud_Computing.pdf
- [16] <http://nz.linkedin.com/pub/paul-quickenden/1/9b2/950>
- [17] <http://www.linkedin.com/pub/christian-reilly/b/439/241>
- [18] <http://gevaperry.typepad.com/main/2011/10/the-future-of-clouds.html>
- [19] <http://www.linkedin.com/in/gevaperry>
- [20] <http://www.focus.com/profiles/boris-renski/public/>
- [21] <http://www.focus.com/profiles/david-mcghee/public/>
- [22] <http://www.focus.com/profiles/sam-johnston/public/>
- [23] <http://gevaperry.typepad.com/main/2011/10/the-future-of-clouds.html>

[24] <http://nz.linkedin.com/pub/paul-quickenden/1/9b2/950>

[25] <http://www.focus.com/profiles/david-gentle/public/>

[26] <http://www.focus.com/profiles/nick-hamm/public/>

[27] http://broadcast.rackspace.com/hosting_knowledge/whitepapers/Elephant-in-the-Room.pdf

[28] <http://www.focus.com/profiles/nick-hamm/public/>

[29] <http://www.linkedin.com/pub/christian-reilly/b/439/241>

[30] <http://www.focus.com/profiles/roger-jennings/public/>

[31] <http://gevaperry.typepad.com/main/2011/10/the-future-of-clouds.html>

[32] <http://www.linkedin.com/in/jurquhart>

[33] <http://nz.linkedin.com/pub/paul-quickenden/1/9b2/950>

[34] <http://www.linkedin.com/pub/christian-reilly/b/439/241>

[35] <http://www.focus.com/profiles/laura-schroeder/public/>

[36] <http://www.focus.com/profiles/simon-robb/public/>