



For Crying out Cloud!

Abstract

This paper discusses a new public cloud services platform that allows users to provide a reliable, flexible, scalable and price competitive cloud computing service, using off-the-shelf, x86 hardware. It is ideally suited to Colocation Providers who want to migrate their business to Infrastructure as a Service in order to take advantage of the explosive growth in the demand for cloud computing services.

Seeing the Light

Amazon's recently announced results for Q2, 2011, reveals the continuing rapid growth of their AWS, EC2 and S3 cloud services. The 450 billion objects currently stored by their S3 service¹, not to mention their cloud service revenues that are projected to exceed \$750 million in 2011, highlight just how successful Amazon has been at growing its public cloud services in the five short years since they started the business. It's been almost thirty five years since Meat Loaf asked, in his classic song 'For Crying out Loud', for 'just another moment to see the light of the day', however the IT industry needs no more time to see that Amazon has started a new era in the delivery of IT infrastructure and cloud computing is about to go mainstream.

This prediction is also backed by the analysts. The recent Forrester report "Sizing the Cloud²" predicts that the overall cloud computing market will grow from \$40.7 billion in 2011 to \$241 billion in 2020. The report also predicts that Infrastructure as a Service (IaaS), the service being offered by Amazon's EC2, will grow rapidly from \$2.9 billion in 2011 to \$5.9 billion in 2014 before tapering off as the cloud growth transitions to Platform as a Service (PaaS) and Software as a Service (SaaS). Forrester predicts that SaaS will produce revenues of over \$132 billion in 2020.

Increasing Competition

Hidden between the lines in all of Forrester's positive growth news are some words of caution. The growth in cloud computing will lead to, and is dependent on, intense competition in the delivery of cloud computing services, resulting in massive reductions in the price of the cloud service. As a consequence, only the leanest cloud service providers that are focused on operational efficiency will continue to be profitable and survive. Today, the ever increasing numbers of companies that are seeking to emulate Amazon's amazing success are totally focused on growing their top line revenues. There is enough demand for cloud computing services that these companies are happy for Amazon to be the price setter. The bottlenecks to growth are the times and costs required to build the data centres that deliver the cloud services, not to mention the time and complexity of commissioning the cloud services platforms themselves. However, as





more capacity comes on line and as installation complexities are simplified, it is inevitable that supply will catch up with demand and then the price wars will begin.

Platform Provider Categories

As with the enterprise data storage market, two categories of cloud services platforms are emerging; 'high cost' proprietary solutions that are provided by the 'big-5' IT / Data Storage providers and 'low cost' open-source platforms that are developed by communities of developers. It is not clear yet to what extent these two segments of the market will overlap and compete, however it is already clear that the 'open source' products will gain a significant slice of the market. The growing acceptance of open-source cloud platforms, as a means for delivering professional cloud computing services, is largely credited to OpenStack™, the massively scalable, open-source, cloud operating system that was launched by Rackspace and NASA in 2010. Within 12 months of its launch, the OpenStack community is supported by over 100 leading IT companies including; AMD, Brocade, Cisco, Citrix, Dell, HP, Intel and NTT.

Cloudonomics

The incentive traditional colocation providers have to change their business model to cloud services is demonstrated in Rackspace's - the industry's 'number 2' cloud services provider - public financial results. In 2008, Rackspace started to grow the cloud services part of their business, which had previously been focused solely on offering colocation services. By the end of 2010, within three years of starting, they had grown their annual cloud services revenues to just over \$100m. In the twelve months between September, 2009, and September, 2010, they were able to increase the proportion of their business coming from cloud from 10% to 13%, corresponding to their revenues, per square foot of rack space, increasing from \$3,750 to \$4,600³. On this basis, if Rackspace was producing all its revenues from Cloud services, the revenue per square foot would increase to almost \$30,000, over thirty times that of their traditional colocation business. Since the only additional infrastructure a colocation company requires to offer cloud services is the IT equipment itself, it's no wonder that colocation companies are scrambling to change their business model to cloud service provision.

Operational Dilema

For many colocation providers cloud service provision is the pot of gold at the end of the rainbow – it is something they desperately want to achieve but they do not know where to start in order to get there. The 'high cost', proprietary systems are available as turnkey solutions but their cost, per unit of rack space, can be over twenty times that of all the ancillary data centre infrastructure and they do not solve the increased operational complexity of IaaS over colocation. Many small to medium sized colocation companies find it very difficult to justify and afford these up-front capital costs, which despite the



increased revenues associated with IaaS, can take up to three years to repay. In addition, the increased operational complexities of IaaS, associated with the frequent need to commission and decommission server, storage and network resources, can lead to increased operational costs and inefficiencies. With today's state of the art, when an IaaS provider wants to provide flexible, elastically scalable cloud computing service to its customers, the frequency at which the server and storage resources need to be reconfigured is greatly increased and much of this reconfiguration can only be done manually. The only way for IaaS providers to avoid the increased need for manual reconfiguration is to offer more rigid combinations of servers, storage and network resources. While this decreases operational costs, it also leads to decreased utilization of assets. Either way, IaaS will lead to decreased gross margins, when compared to traditional colocation, unless some automated solution for provisioning resources in a flexible and scalable way can be developed.

The same operational complexities exist with the 'low cost', open-source cloud services platform alternative. The open-source solutions available today do reduce the up-front costs to the cost of the IT hardware, but they also introduce the additional complexity of being very difficult and time consuming to install. As a result, while many colocation companies talk of being able to offer an IaaS service, the service being offered is generally inflexible and not immediately available on demand. Their customers request additional resources, either through a user portal or by email, and wait anything from one hour to one day for those resources to be made available.

Orkestra™ – Cloud Services Platform

Orkestra™ is a recently released Cloud Services Platform from MPSTOR Ltd., an established storage management software company, based in Ireland. Orkestra is an integration of a number of discrete functional blocks, each of which is a stand-alone product in its own right. Orkestra does for OpenStack what RedHat and Suse do for Linux – convert open source code into a packaged solution that is more efficient, easier to use and is professionally supported. Orkestra can be purchased as a software-only solution, where it can be downloaded to standard x86 hardware, either by the end user or system integrators. It is also available as an 'out-of-the-box' solution, preconfigured on a range of standard hardware, which can be purchased either direct from MPSTOR or through one of its OEM partners.





The platform for Orkestra is MPSTOR's block level, storage management stack, MPStackware™, which has been sold through OEM channels as a stand-alone product for almost two years. Built on this platform is ProVizo™, MPSTOR's framework for automating the discovery, registration and provisioning of storage resources as they are added to a horizontally scalable, cloud service provider platform. Orkestra is also 'built with OpenStack™', the open-source, massively scalable, cloud operating system that was launched by Rackspace and NASA in 2010. OpenStack is fast becoming the de-facto industry standard for open source cloud operating systems and is supported by over one hundred IT companies, including; AMD, Brocade, Cirtas, Cisco, Dell, HP and Intel. Also integrated in Orkestra are an Administrator Portal and User Portal, where the latter can be customised or integrated into the IaaS provider's own web portal.

With Orkestra, customers get a range of functionality and performance not included with Openstack, such as; automated provisioning of storage to servers, dynamic bandwidth Management – ensuring each user gets the quality of service they pay for - and federation tools to monitor and control asset utilization. Additionally, Orkestra's open-platform architecture allows it to run on a wide range of off-the-shelf servers, eliminating concerns of vendor lock-in and ensuring that hardware can be purchased at the most competitive prices.

Payback Time

Case studies, carried out by MPSTOR, have shown that the payback time for companies who are using Orkestra, as a public cloud services platform, is generally less than six months. Colocation companies, who already have the building infrastructure in place to offer a colocation service can be up and running with the Orkestra cloud services platform in two to four weeks. More significantly, in these cases, the new IaaS businesses can produce revenues, per unit of rack space, that were between twenty and thirty times greater than those produced by the original colocation business and at similar gross margins.

References:

1. From “**Amazon S3 - More Than 449 Billion Objects**” by Jeff Barr, Amazon Web Services Blog, July 19th, 2011
2. From “**Sizing The Cloud - Understanding And Quantifying The Future Of Cloud Computing**”, April 21, 2011, by [Stefan Ried, Ph.D.](#), [Holger Kisker, Ph.D.](#), at Forrester Research
3. From “**How the Cloud is Driving Profits at Rackspace**”, January 4th, 2011 by Rich Miller (<http://www.datacenterknowledge.com/archives/2011/01/04/how-the-cloud-is-driving-profits-at-rackspace/>)

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October, 2011

