

Cloudeconomics: achieving cost-efficiency and agility through hybridization

by Raj Dutt, senior vice president of technology, Internap

Enterprises are attracted to public IaaS Clouds to improve IT economics and improve business agility. The economics of Public Cloud does not fair better than a well-run data centre, but it wins on flexible capacity for peaks and troughs. The agility, that is, easy accessibility, Internet-speed updates and ubiquitous availability, also brings serious security and control issues. Despite limitations on software choices, such is the attraction of the Public Cloud that it is not unusual for employees to side-step IT altogether, without resolving the security and liability issues. A far better option is to deploy hybrid solutions that utilise existing enterprise infrastructure and select which Cloud (public or private) for which type of activity and for which level of data sensitivity.



Raj Dutt is senior vice president of technology in Internap. Mr Dutt is responsible for setting Internap's technology strategy and vision. In this capacity, he identifies and architects the next-generation suite of technologies in support of the company's hosting, enterprise IP and content delivery network services. Mr Dutt has extensive experience in building highly agile application ecosystems and applying open-standards, modular components and automation to overcome the limitations of physical environments.

Mr Dutt joined Internap through the company's acquisition of Voxel in 2011, where he was founder and chief technology officer. He founded Voxel in 1999 with the vision of providing application infrastructure in the same way that great software developers write applications - through comprehensive systems design and execution. Mr Dutt led the company as chief executive officer from its inception until January 2011, when he successfully raised growth capital to support the business's rapid market expansion and focused his efforts full-time on architecting the technology platforms that drive Voxel's services. During his tenure as CEO, Mr Dutt organically built Voxel from the ground up to 40 employees and approximately US\$10 million in revenue. His technology vision resulted in the launch of Voxel's Managed Hosting, VoxCAST CDN and VoxCLOUD products.

Raj Dutt studied Computer Science and Management at Rensselaer Polytechnic Institute.

Recently, just about every technology company on the planet has been busy repainting their offerings with a Cloud brush. They're layering it on thick, rebranding themselves with a reckless abandon that we haven't seen since the 'dot com' era, more than a decade ago. Even though the Cloud hype meter is revving uncontrollably, there's actually plenty of real innovation and disruption happening beneath the surface. Unfortunately, it can be tough for enterprises to cut through the buzzwords and marketing double-speak and articulate a Cloud strategy that makes sense and meets the needs of the business.

Understanding the public IaaS Cloud

This article approaches things from the bottom of the Cloud-layered cake:

Infrastructure as a Service (*IaaS*). Almost every enterprise already has a sizable investment in their server and storage infrastructure. Some operate their own data centres. Many co-locate their infrastructure with a third-party data centre service provider.

IaaS offers the same infrastructure building blocks - servers and storage - where the capacity is provided as a service and 'on demand' - in the Cloud. No longer do enterprises have to build and buy their own server and storage environments - they can simply pay for the capacity that they need, when they need it. The public IaaS Cloud offers capacity to anyone willing to pay for it, similar to the electric utility grid.

Sounds straightforward enough, right? However, what sort of benefits does IaaS

bring to the average enterprise? Can it help cut their costs? Help them be more agile and competitive? Are there security and compliance concerns? What about jurisdiction and data privacy issues? Will enterprises be at a disadvantage if they don't get on the IaaS bandwagon?



There's no doubt that IaaS (and everything built on-top of it) is going to dramatically alter and transform enterprise IT. In fact, it will likely happen faster than many think. Over the last few years, IT has come to stand for Internet Technology, and as a result, consumers of IT are demanding that it start to move at Internet Speed. Enterprises are eager to realise the benefits of the public Cloud, but they also want their flexibility, control and security requirements to be met. Luckily, it's possible for enterprises to have their Cloud cake and eat it too.

Business success requires broader approach

Often, the best solution is a hybrid, one that melds the existing internal capabilities and assets of the IT organization with the benefits that the Cloud offers. There are two main reasons that enterprises are attracted to public IaaS Clouds: improved economics and improved agility. The combination of these factors actually makes a hybrid solution very compelling.

Let's start with the economics. What is the cost savings potential of public IaaS Clouds? Will an enterprise save money by moving servers into the Cloud? Probably not! Compare the 'all-in' costs for operating thousands of servers for a few years in a well-run corporate data centre (or wholesale colocation environment) versus having that same capacity on a pay-as-you-go public IaaS Cloud. The Cloud will lose every time ... badly.

This is a surprise to most people and somewhat of a dirty secret within the IaaS industry. For predictable workloads and core base infrastructure that is always-on, the public Cloud is a more expensive option. This economic imbalance only gets worse when you consider that Moore's Law allows internal IT to more than triple the performance-per-dollar with every server refresh. Are we seeing similar price declines with IaaS Cloud services? Not really, and we probably won't any time soon.

On the other hand, the public Cloud can make a lot of sense for unpredictable workloads. Enterprises can leverage the Cloud to expand capacity 'on demand' without incurring capital expenditures on new servers. Workloads that are well suited for public IaaS Clouds typically have great variability in demand with significant traffic peaks and troughs, such as batch jobs, new software rollouts, marketing campaigns and seasonal projects. Perhaps human resources

needs some extra capacity during employee enrolment periods or sales needs more during an e-commerce initiative and needs less during the holiday season.

The most cost-effective approach for an enterprise is often a combination of public Cloud, other third-party IT service options (such as colocation, managed hosting or even private Cloud) and in-house IT resources. This hybrid approach makes even more sense when an enterprise already has existing sizable infrastructure investments. It's generally a good strategy to consider the individual workload when making a decision about whether to run it on a public IaaS Cloud or elsewhere.

Next, let's consider agility, a word that is much used by IaaS vendors. It is where the Cloud truly shines - in just about every situation. So what's not to love? While agility is closely related to accessibility, it's diametrically opposite to security and control. This is yet another reason why a hybrid approach is often the right one for enterprises.

A CIO friend of mine recently confided how upset he was when he found out that employees within most of the company's business units were leveraging public Cloud services - without his knowledge. It was especially infuriating given that he'd just spent millions of dollars on two new corporate data centres that were only half full. In his mind, something had gone horribly wrong. A major contributing factor to the surprising popularity of public IaaS Cloud was the inefficiency of internal IT. It took them months to add new servers in their own data centres. In fairness, the blame didn't rest squarely with IT. They had to get budgetary approval, place orders, get various sign-offs, install the servers, and finally release the infrastructure to the appropriate business unit, many weeks later. So, instead of addressing what they felt was a sub-optimal solution, employees had started side-stepping IT

altogether. They were going straight to third-party public IaaS Cloud providers - corporate credit cards in hand. The promise of agility was pulling the business units towards the public Cloud.

All of this was quite annoying to my CIO friend. Cost wasn't even his biggest grievance. The bigger concerns related to security and liability issues. When users go to the public Cloud, they bypass many important processes and controls that the enterprise had spent years putting into place. The public IaaS Cloud doesn't offer the same level of control or oversight that internal IT does. Unlike their own internal data centres or even a colocation environment, with a public Cloud, enterprises have no insight into the servers, switches, and storage environment.

Since everything in the public Cloud is shared as multi-tenanted resources, enterprises have to place their faith in the integrity of the Cloud service provider and the underlying software. Additionally, in the public Cloud, there is almost no flexibility in network topology or hardware configuration. Want to use the latest fast SSD drives for your Oracle server? Too bad. Have a penchant for the latest firewalls from Cisco? Sorry.

Therefore, while agility is clearly a big win for the public Cloud, security and control issues complicate matters. Again, a hybrid, workload-centric, approach makes sense. Use the public Cloud for workloads that aren't high security, and consider the economics of the workload in your decision too. Some hybrid Cloud solutions even allow enterprises to reap the agility benefits of the public IaaS Cloud in their own data centre - essentially creating an on-premise private Cloud.

In conclusion, it's important that enterprises keep their head ABOVE the Clouds by putting their business needs foremost. Take a workload-centric approach, and pick the right IT infrastructure tool for the job - whether that is public or private Cloud, managed hosting or colocation. The best hybrid solutions will be greater than the sum of their parts and will allow enterprises to create a flexible infrastructure that can be centrally managed and that will evolve with their business. ●

