



The Business Case for the Enterprise Cloud

ISSUE I

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WELCOME

The growing corporate embrace of cloud computing presents two primary infrastructure choices for IT managers. “Commodity clouds” offer robust scalability, but place operational burden on the user for implementing the level of infrastructure, security and management that corporations typically demand. Alternatively, “enterprise clouds” emphasize built-in, automated services that reduce operational burden while offering the binding SLAs most business-critical applications require. In evaluating their cloud strategy and workload specific needs, enterprise should assess, compare, and contrast these two options. Common evaluation criteria include service quality, automation, management tools, and application services such as platform-as-a-service (PaaS). While commodity clouds remain a viable option for many workloads, enterprises may find that these factors even the playing field on total costs of ownership, and, once the human cost of systems management is considered, tip the cost equation in favor of enterprise clouds for business critical applications and large complex environments.

The comedienne Joy Behar once inadvertently summed up the concept of public cloud computing while describing her ideal dating scenario: “I want a man in my life,” she said, adding, “Not in my house.” So it is with enterprise cloud computing. The growing consensus is that corporate IT managers are looking for a “data center in the cloud” - a data center that functions in nearly identical ways to the ones they already have on premise, with the same IT roles and responsibilities, but without the headaches of hardware. In other words, businesses increasingly want data centers in their lives, just not in their houses.

Getting there is another matter. Think about corporate data centers today – infrastructure is highly resilient, secure, and backed by tight internal SLAs.

Corporate IT data sovereignty guidelines are followed to the letter. So why have commodity clouds become so popular with big business?

Simple: agility. Inexpensive, on-demand virtual servers are attractive to developers and other corporate citizens frustrated with long procurement and deployment cycles. After all, employees are accountable for business results. When IT is a bottleneck, rather than an enabler, users find their own way to be productive, even if corporate IT guidelines are compromised. This phenomenon is known as “Shadow IT.”

And Shadow IT has the attention of CIOs around the world. IT executives – seeking a more strategic role in the board room - are working to find the right balance of agility, cost, and control. Wary of the limits of commodity clouds, enterprise clouds are becoming more attractive.

Why? Think about the applications that power an enterprise. Traditional Linux and Windows apps in resilient, highly-available environments with built-in backup and disaster recovery. Corporate systems are often automated, and integrated for ease of management. Commodity clouds solve many complex

problems, but precious few are ready-made for enterprise IT. They usually have a lower hourly rate for usage of compute and storage resources, but these pennies pale in comparison to the human cost of architecting them to corporate standards and integrating disparate services to automate and manage them.

Shouldn't there be a way to combine the elasticity, self-service, and metered usage of commodity clouds, with governance and management ease of traditional IT systems?

This article aims to explore the business case for the enterprise cloud, focusing on public cloud Infrastructure-as-a-Service (IaaS). The discussion will examine the business differences between enterprise and commodity cloud IaaS. Topics to be covered include infrastructure services and support, automation, management, and application services.

ENTERPRISE VS. COMMODITY CLOUD USE CASES

According to Gartner, cloud compute infrastructure as a service is defined as a “virtual data center of compute, storage, and network resources delivered as a service.” Buyers often choose services based on two factors: IT operations efficiency and built-in technological sophistication.

In the most recent “Magic Quadrant for Cloud Infrastructure as a Service”, Gartner recognizes these tradeoffs, saying “One size does not fit all. As the IaaS market matures, clarity is emerging about the range of different customer needs. Workloads vary in their availability and performance needs, and in the general complexity of the overall application infrastructure. Customers vary in the importance that they place on security, customer service and ease of use. Customers also vary in how much they want to manage themselves, versus how much they want the IaaS provider to manage for them.”

Figure 1 illustrates key the spectrum of tradeoffs customers consider. Enterprise clouds offers the highest levels of IT efficiency and innate technological sophistication. Specifically, corporate users host applications on ready-made architecture that is highly available and fault tolerance. In contrast, commodity clouds will offer very attractive compute pricing and a variety of building block services that enterprises can piece together, but these also require the user to architect their application to achieve required availability attributes on their own.

If both clouds can achieve the same result, the question then becomes: “What are your IT operational experts’ time worth?” Should IT spend its limited cycles building and designing new architecture for legacy systems? Or is it a better investment for the company to deploy IT pros elsewhere, and look to an enterprise cloud to provide these features natively?

There is no single correct answer for a given workload or use case. Varied use cases create conditions that favor different choices. Ultimately, most organizations employ both commodity and enterprise services. A basic, relatively unsophisticated IaaS may be suitable for “bursty” traffic from a short-term advertising campaign or “cold storage” of archived records that are not frequently

accessed. But companies that want to move critical business systems to the cloud often require a far higher level of built-in technological sophistication, and an ability to easily migrate legacy systems. And, they will want to manage cloud resources as efficiently as possible, in line with how they manage physical infrastructure today. If moving to a commodity cloud only creates more administrative load, the business can quickly find their Total Cost of Ownership (TCO) far higher than expected.

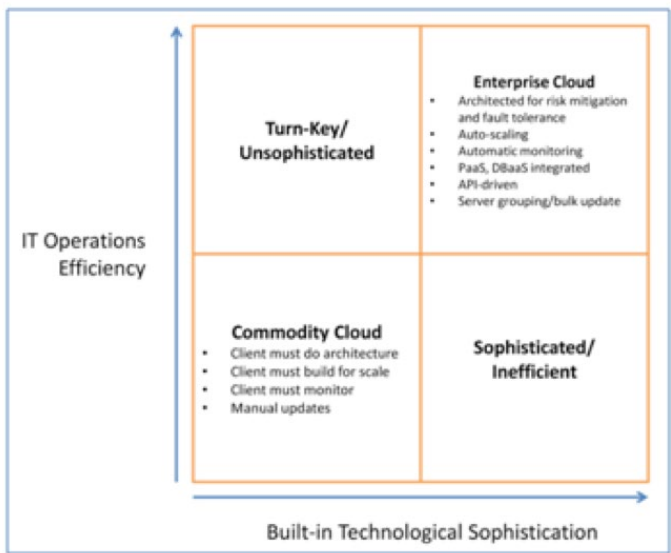


Figure 1 – Tradeoffs in IT operations efficiency and built-in technological sophistication define the differences between enterprise and commodity cloud offerings.

BASELINE INFRASTRUCTURE SERVICES AND SUPPORT

Enterprise and commodity clouds differ greatly in their approach to baseline infrastructure, services and support. Commodity cloud providers push traffic over uncontrolled public networks and run workloads on shared server farms comprised of low-end hardware. While this is great for highly elastic consumer applications (think Netflix on a Saturday night), this does not meet the strict service levels required by enterprise IT managers. In contrast, enterprise cloud solutions deliver consistent network performance, premium hardware and a globally redundant infrastructure.

Enterprises are used to buying solution sets backed by service level agreements and a trusted vendor. To meet this need, enterprise cloud providers offer a higher level of service and support than their commodity counterparts. The enterprise cloud involves high-touch, highly consultative sales and support, which corporate clients need for critical applications. An integrated, self-service interface is part of the package, but live experts are always available. It can be subjective to assess whether a cloud provider is offering truly enterprise-level service and support. Many offer live phone support. However, an enterprise cloud provider staffs support personnel who understand enterprise IT requirements and common corporate systems. They are able to resolve difficulties quickly.

Some skeptics may now ask – isn't this the same model that caused dissatisfaction within the enterprise in the first place? These enterprise qualities in a vendor aren't mutually exclusive. IT needs to be looking for "solution sets" and aggressive SLAs for cloud, along with self-service and immediate availability of resources. And don't be fooled by a "cloudwashed" solution, which is traditional hosting disguised as cloud.

What's it all worth? Compare the monthly cloud bill of an

enterprise and a commodity cloud, and then compare the potential cost of a problem. A lack of consistent application performance on commodity clouds, caused by public network traffic, slow hardware, poorly thought-out application architecture, or traffic-deluged "noisy neighbors" can negatively affect customer experience and damage a company's brand image. This carries a cost. And if the experience is bad enough, customers will defect.

System outages and security breaches are expensive, with one analyst pegging the expense of downtime at \$160,000 per hour for an enterprise application. For an e-commerce company, downtime could cost orders of magnitude more.

Of course, all IaaS instances are vulnerable to outages. However, the way that failover and system recovery are set up can make a big difference. Context is important. An e-commerce server that goes down for an hour on Cyber Monday is going to be more damaging than an email server going down on a weekend.

Table 1 provides a simple example. In this case, the assumption is that better infrastructure, networking and support of the enterprise cloud give it uptime of 99.999% versus 99.99% for commodity cloud. If downtime cost \$160,000 per hour, the commodity cloud will cost over \$125,000 in extra downtime. When evaluating the additional budget required for an enterprise cloud solution, IT managers for this hypothetical organization can estimate return on investment (ROI) for enterprise cloud by dividing the IaaS budget differential by the potential downtime cost. If the enterprise cloud solution were \$75,000 more expensive than commodity cloud – a gap indicative of an annual cloud spend of over a million US dollars- the ROI would be 68%.

Table 1 – The cost difference between IaaS offering 99.99% uptime and 99.999%

	Commodity Cloud	Enterprise Cloud
Uptime	99.99%	99.999%
Hours of downtime per year	0.876	0.0876
Cost per hour of downtime	\$ 160,000	\$ 160,000
Total downtime cost	\$ 140,160	\$ 14,016
Delta	\$ 126,144	

AUTOMATION

Enterprise cloud solutions provide more automation of infrastructure administration than commodity cloud alternatives. The result: increased savings and better ROI. There is a clear business benefit from being able to deploy, manage and monitor cloud-based systems in an automated and consistent fashion. Fast, repeatable deployment translates to agile operations, even in the face of rapidly changing business strategy. Then, there's human cost. Consider the cost of “orchestrating” complex systems in the cloud. If IT has to spec, design, and deploy the application server, database, storage and network settings for a system every time they deploy it, the process will require the repetition of costly staff hours. This repetitive task is commonly done with most commodity cloud offerings.

In contrast, an enterprise cloud solution makes it possible to create a repeatable template for common deployments. This is far more efficient and inexpensive in the long run. Table 2 compares the IT administrative hours required to deploy a system in three instances. In the commodity cloud, the IT administrator spends 30 hours on deployment for each new environment. The enterprise cloud user spends 50 hours building a template that may then be deployed in two hours. At a fully-burdened labor rate of \$70 , per hour, the enterprise cloud results in a savings of \$2,380, or 62%. The same calculation could be run on a number of different automated

Table 2 – Comparison in total administrative costs of deploying a system in multiple instances with and without automation and templating.

	Hours to Deploy in the Commodity Cloud	Hours to Deploy in the Enterprise Cloud
Create template for System (IT Admin Hours)		50
Deploy System Instance 1	30	2
Deploy System Instance 2	30	2
Deploy System Instance 3	30	2
Total hours	90	56
Fully burdened IT admin hourly wage	\$ 70	
Total cost	\$ 6,300	\$ 3,920

tasks, such as security patching, operating system updates, disaster recovery and so forth. Enterprise clouds make this process point- and-click easy, requiring comparatively lower – and lower costs – skill sets. Yes, commodity clouds can be upgraded to achieve similar levels of automation with custom scripts and add-on modules, but these features add cost and complex, while increasing the human cost. It's the similar “build-in” versus “bolt-on” conversation IT has wrestled with for years.

Enterprise clouds offer an automated and administratively efficient solution. This, in turn, makes the enterprise option actually cheaper by almost any measure. When evaluating IaaS solutions for a given workload, IT managers should endeavor to understand the true business value – and total cost of ownership – for each option. Be sure to take the cost of labor into account, as well as the opportunity costs of downtime. Figure 2 depicts the tension between hard costs and savings that include risk mitigation, opportunity costs, and reductions in numerous labor-related expenses like backups and OS patching.



Figure 2 – The cost vs. value balancing act that arises in debates about investment in enterprise vs. commodity cloud solutions.

MANAGEMENT & ROLE-BASED ACCESS CONTROLS

As companies realize more efficiency from the cloud, their spend tends to grow as well. However, if this growth can't be managed well, inefficiency drags the business back down in a vicious cycle.

“Server sprawl” is a common problem in the physical infrastructure world. Over time, servers pop up in many places and vast amounts of CapEx go underutilized. The same can happen in the cloud world, without the umbrella of cloud management and governance functions. This is another reason why the commodity cloud does not always end up as the lower-priced option: without strong management in place, businesses over-provision resources and virtual machines rack up unexpected charges.

Organizationally, one of the main elements of cloud management is achieving control over spending and fine-grained awareness of cloud system usage that can be charged back to lines of business. Enterprise cloud solutions deliver on this capability with a combination of management tools. Management interfaces give administrators a high degree of control over VM provisioning and system governance. They enable IT to define, enforce and monitor usage policies.

For instance, enterprise cloud solutions typically offer built-in role-based access controls (RBAC). RBAC governs who can add to or modify the infrastructure,

mitigating the risk of runaway VM charges. In addition, the management functions offer detailed billing, with the ability to set up charge-back accounts and sub-accounts for transparency into who used what and for how long. For example, if the HR department has an account for its enterprise cloud systems, the IT department should be able to present HR with a detailed charge-back bill that shows usage for sub-accounts such as payroll, records storage, and so forth. This concept – dubbed “IT as a service” – is a nirvana of sorts for CIOs. It transforms IT into an enabler of business units, elevating it from being a risk-adverse gatekeeper.

APPLICATION SERVICES

Some cloud providers offer “application services” in addition to virtual servers, such as Platform-as-a-Service (PaaS), Database-as-a-Service (DBaaS), messaging-as-a-service, and so forth. Enterprise cloud vendors tightly integrate these services, making it more efficient to develop, deploy and manage complex cloud-based systems than is usually possible on a commodity cloud.

PaaS provides a good example of how application service integration drives efficiency in the cloud. Developers who utilize agile methodologies on PaaS can generate new application code on a rapid cycle. A challenge emerges, however, when these rapid-fire code releases need to be put into production. A tight PaaS-to-IaaS integration can radically reduce the time and resources required to hand-off the code drop from development to IT operations. By automating the development-to-production transition – a philosophy known as “DevOps” - enterprise cloud services accelerate the software development lifecycle.

Conclusion

An organization with complex business computing needs should opt for enterprise cloud solutions for simple economic reasons. Though some scenarios favor the simplicity and (theoretically) lower costs of the commodity cloud approach, critical systems usually run better on an enterprise cloud and are more likely to comply with corporate IT policies. Basic infrastructure, service and support are almost always superior in the enterprise cloud solution, offering peace of mind and higher service levels to IT management. Calculating the true costs of an outage (or sub-par service levels) demonstrates one positive of the enterprise approach. A higher level of automation makes the enterprise cloud more cost-effective to operate, while more sophisticated management tools bring more economical infrastructure usage and finer-grained control to the IT department. The close integration of application services, such as PaaS, provides additional value by speeding up system deployment and reducing reliance on costly operations personnel.

Overall, the importance of the human element is the most important takeaway from this comparison of the commodity and the enterprise clouds. The costs of people performing cloud administrative tasks – or the savings inherent in automating these activities – weigh heavily on any assessment of the relative business value of enterprise cloud. Service and support quality are determined by people as much as by the technology they use. Well-designed management tools empower administrators to balance, cost, agility and control. The technological sophistication of the enterprise cloud makes IT efficiency possible, and with a minimum of human intervention.

ABOUT CENTURYLINK CLOUD

CenturyLink Cloud is a complete cloud management platform for mid-tier to large enterprises, as well as SaaS providers. CenturyLink Cloud has combined elements of the traditional enterprise cloud market with those of cloud management platforms, allowing us to bring even more value to our customers than any one provider in either of those markets alone. We bring a suite of cloud products and services with advanced management and orchestration together in a single platform, enabling our customers to run workloads ranging from simple dev and test environments to the most complex and demanding enterprise applications.

For more information, visit www.centurylinkcloud.com.