Cloud Computing: A Brief Introduction

LAD ENTERPRIZES, INC.
www.ladenterprizes.com
610-429-3122

February 20, 2010

By: David Burford, CFA, MBA, MCP

Cloud Computing: A Brief Introduction

Numerous surveys report that Cloud Computing will be a top 10 technology that enterprise business managers need to be aware of for 2010. Not that you can escape the marketing and information published about this latest superhyped topic. Much of the message focuses on Cloud Computing as a lower cost delivery model for IT services. **This may or may not be true.**

So What is Cloud Computing?

We see Cloud Computing as a computing model, not a technology. In this model "customers" plug into the "cloud" to access IT resources which are priced and provided "on-demand". Essentially, IT resources are rented and shared among multiple tenants much as office space, apartments, or storage spaces are used by tenants. Delivered over an Internet connection, the "cloud" replaces the company data center or server providing the same service. Thus, Cloud Computing is simply IT services sold and delivered over the Internet. Refer to Page 4 for various Types of Cloud Computing.

Cloud Computing vendors combine virtualization (one computer hosting several "virtual" servers), automated provisioning (servers have software installed automatically), and Internet connectivity technologies to provide the service. These are not new technologies but a new name applied to a collection of older (albeit updated) technologies that are packaged, sold and delivered in a new way.

A key point to remember is that, at the most basic level, your data resides on someone else's server(s). This means that most concerns (and there are potentially hundreds) really come down to trust and control issues. Do you trust them with your data?

The Economics

Economies of scale and skill drive Cloud Computing economics. As with rented Real Estate, the costs of ownership are pooled and spread among all tenants of the multi-tenant Cloud Computing solution. Consequentially, acquisition costs are low but tenants never own the technology asset and might face challenges if they need to "move" or end the service for any reason.

Something that is often overlooked when evaluating Cloud Computing costs is the continued need to provide LAN services that are robust enough to support the Cloud solution. These costs are not always small. For example, if you have 6 or more workstation computers, you will probably need to continue to maintain a server in a domain controller role (to ensure name resolution), at least one switch (to connect all of the computers to each other and the router), one or more networked printers, and the router for the Internet connection.

What do I need to use Cloud Computing?

All that is really needed to acquire and use Cloud Computing solutions is a credit card (or other payment method) and a LAN with an Internet connection robust enough to support the Cloud delivered service. These two requirements are deceptively simple.

From a technical point of view the biggest challenge for businesses, particularly SMBs, may be the need for an appropriately robust LAN infrastructure and Internet connection. Typically, Internet access is provided by a single commercial service ISP provider through a single port on a router. A characteristic of this type installation is that all of the computers connecting through the LAN share the Internet bandwidth equally. This can quickly become an issue.

For example: Verizon FiOS Internet 15/2 (down/up) service might have a measured speed of 14420/1867 Kbps. This would seem to be plenty of speed. However, suppose a business had 5 computers using a Cloud solution and sending data to the cloud for processing. The bandwidth available to each computer would be 373Kbps (up 1867/5). That is about 46 (8 bit) characters per second to the cloud application

and does not include any communication or application data. The cloud solution might not work or responses so slow as to be unacceptable. It isn't the download speed that becomes a limit, but he upload speed. Refer to Page 5 for a Bandwidth Chart.

The on-demand nature of Cloud Computing presents a dilemma: The on-demand model includes a self-service interface that allows users to self-provision services (for example storage). This empowers users but can make services too easy to acquire and consume. To quote an IT administrator ***"People could care less about policies. … They want what they want when they want it. They don't involve IT."***

Consider the faculty member at the University of Massachusetts who quietly (without anyone's knowledge) used a cloud service to back up 20 GB of data each night over the Internet bringing the school LAN to its knees. How management controls Cloud Computing is unique to each organization and is an IT Governance issue.

Conclusion

We are often told particularly by vendors and evangelists, ***You don't like Outsourced or Cloud Computing solutions***. This is simply not true. Outsourcing and using third parties for service can be very helpful to clients. However, we do not think that these solutions are appropriate or effective in every situation or for every organization.

Types of Cloud Computing

SaaS (Software As A Service)

Is the most widely known and widely used form of cloud computing. It provides all the functions of a sophisticated traditional application to many customers and often thousands of users, but through a Web browser, not a "locally-installed" application. Little or no code is running on the Users local computer and the applications are usually tailored to fulfill specific functions. SaaS eliminates customer worries about application servers, storage, application development and related, common concerns of IT.

Highest-profile examples are Salesforce.com, Google's Gmail and Apps, instant messaging from AOL, Yahoo and Google, and VoIP from Vonage and Skype.

PaaS (Platform as a Service)

Delivers virtualized servers on which customers can run existing applications or develop new ones without having to worry about maintaining the operating systems, server hardware, load balancing or computing capacity. These vendors provide APIs or development platforms to create and run applications in the cloud – e.g. using the Internet. Managed Service providers with application services provided to IT departments to monitor systems and downstream applications such as virus scanning for e-mail are frequently included in this category.

Well known providers would include Microsoft's Azure, Salesforce's Force.com, Google Maps, ADP Payroll processing, and US Postal Service offerings.

IaaS (Infrastructure as a Service)

Delivers utility computing capability, typically as raw virtual servers, on demand that customers configure and manage. Here Cloud Computing provides grids or clusters or virtualized servers, networks, storage and systems software, usually (but not always) in a multitenant architecture. IaaS is designed to augment or replace the functions of an entire data center. This saves cost (time and expense) of capital equipment deployment but does not reduce cost of configuration, integration or management and these tasks must be performed remotely.

Vendors would include Amazon.com (Elastic Compute Cloud [EC2] and Simple Storage), IBM and other traditional IT vendors.

BANDWIDTH CHART

Type Connection	Speed (kbps) 1,000 bytes (down/up)	Web page 400kb (avg)	AV Slow 128kbps	Video Conferencing 384kbps	Character Per Second Up to Cloud
Dial-up (modem)	56	7.1 sec	2.2 sec to load 1 sec of material		7
IDSL	144	2.8 sec	0.9 sec to load 1 sec of material		**18**
ADSL* (typical)	3,000/768	0.1 sec	.04 sec Download 0.17 sec Upload	0.13 sec Download 0.5 sec Upload	**96**
T1 (DS1)	1,544	0.26	0.08 sec	0.25 sec	**193**
Cable Modem* (best)	6,000/768	0.07 sec	0.02 sec Download 0.17 sec Upload	0.06 sec Download 0.5 sec Upload	**96**
FiOS* (slowest residential)	15,000/5,000	0.03 sec	0.009 sec Download 0.026 sec Upload	0.026 sec Download 0.077 Upload	**625**

* Speed presented is representative of the type and varies by service provider and subscription package. Always check with your provider to determine your service.

Some speeds can be improved by using data compression technologies.

- All speeds use SI notation: 1 kb = 1,000 bytes
- All speeds are quoted in kbps
- Speeds/time does not reflect overhead for communication protocols

You may want to check your actual Internet connection speed. This will always be slower than your subscribed speed due to factors such as communication protocol and time to travel distance. Conduct the test several times using servers in different geographical locations, record the results and calculate an average speed. Some Internet test services include:

SpeakEasy http://www.speakeasy.net/speedtest/
DNSStuff http://www.dnsstuff.com/speedtest/?
Verizon http://www2.verizon.net/micro/speedtest/java/

LAD Enterprizes, Inc is a Management and Information Technology firm known for their "IT Coaching" approach. By integrating Business and Information Technology, LAD Enterprizes ***Coaches, Advises, and Assists*** their clients with their technology vision, strategy, operations, and performance.

CONTACT INFORMATION

LAD ENTERPRIZES, INC. www.ladenterprizes.com

Laura Dallas Burford laura@ladenterprizes.com 610-429-3122