



Cloud Computing

Cloud Computing is essentially Internet-based computing, whereby shared resources, software and hardware are provided to computers and other devices on-demand, like a public utility.

Cloud Computing addresses what companies need - a way to increase capacity or add capabilities on the fly without investing in new infrastructure, training new personnel, or licensing new software, and reducing costs through its subscription-based or pay-per-use service.

Cloud computing is at an early stage, not without concerns; such as security, complexity of management and upfront costs.

According to a recent Info-Tech Research Group survey, 97% of organizations believe that Cloud Computing will play a role in their business within 3 to 5 years.

In Canada, the highest level of adoption is software-as-a-service (SaaS) at about a 30% adoption rate, and growing. The adoption of infrastructure-as-a-service (IaaS) follows second at 10%; and about 6% of Canadian companies are using platform-as-a-service (PaaS).

Who's offering these services? Short answer: Everyone. Microsoft has Azure and BPOS, Google has Google apps, Amazon has Virtual Private Cloud, plus hundreds of others.

Benefits

Cost is claimed to be greatly reduced and capital expenditure is converted to operational expenditure. Consumption is usually billed on a utility (like electricity) or subscription (like a newspaper) basis with little or no upfront cost, and lower maintenance costs.

Limitless Flexibility: With access to millions of different pieces of software and databases, and the ability to combine them into customized services, users are better able to find needed answers.

Reliability improves through the use of multiple redundant sites, which makes Cloud Computing suitable for business continuity and disaster recovery. However, many major Cloud Computing services have suffered outages.

Enhanced Collaboration: By enabling online sharing of information and applications, Cloud Computing offers users new ways of working and "playing" together (think social networks).

Portability: Users can access their data and tools anywhere that they can connect to the Internet.

Simpler Devices: With data and the software being stored in the Cloud, users no longer need a powerful computer. They can interface using a cell phone, PDA, or personal video recorder.

Security could improve due to centralization of data, increased security-focused resources, etc., but concerns can persist about loss of control over certain sensitive data. The nature of Cloud Computing does not currently lend itself well to all forms of security.

Issues

Privacy: The Cloud Computing model is under a fair amount of scrutiny by privacy advocates and lawmakers. The concern is around the level of visibility and control (lawfully or unlawfully) that the Cloud Computing providers have into communications and data storage. This is especially relevant when there are conflicting requirements within laws such as Canadian PIPEDA and the US Patriot Act.

Compliance: In order to obtain compliance with regulations including FISMA, HIPAA, PCI, and SOX, users may have to adopt community or hybrid deployment modes, which are typically more expensive and may offer restricted benefits. Business and service level agreements are often required to meet regulatory and legislative requirements. Many providers also obtain SAS 70 Type II certification.

Changing Providers: There is concern about the difficulty in extricating oneself from a cloud provider, and particularly in moving data from one provider to another. No real standards exist in this area yet, which adds to the pressure on providers to create a sense of needed security.

Terminology

SaaS – Software as a Service

This type of Cloud Computing delivers a single application through a browser to thousands of customers using a multi-tenant architecture. Salesforce.com is by far the best known example amongst enterprise applications, but SaaS is also common for HR applications, as well as ERP, and SaaS desktop applications such as Google Apps.

Utility Computing: IaaS (Infrastructure as a Service) and PaaS (Platform as a Service)

The idea is not new, Amazon.com, Sun, IBM, and others now offer storage and virtual servers that IT can access on demand. Early enterprise adopters mainly use utility computing for supplemental, non-mission-critical needs, external storage or DRP's. PaaS delivers development environments as a service. You build your own applications that run on the provider's infrastructure, and are delivered to your users via the internet.

Web Services in the Cloud

Closely related to SaaS, Web service providers offer APIs that enable developers to exploit functionality over the Internet, rather than delivering full-blown applications.

MSP (Managed Service Providers)

One of the oldest forms of cloud computing, a managed service is basically an application exposed to IT rather than to end-users, such as a virus scanning service for e-mail or an application monitoring service.

Internal or Private Cloud

The internal cloud is a term being applied to a virtualized internal infrastructure. According to recent research from IDC Canada, roughly 70% of Canadian organizations are looking to adopt private clouds before public clouds.

US versus Canadian Privacy Laws

The US Patriot Act permits government and law enforcement agencies the ability to search data retained by service providers. The Canadian and provincial privacy laws (including PIPEDA and PIPA) are in conflict with the US Patriot Act, and Canadian companies looking to store private data in the US need to manage the risk. Also, data stored in Canada, but accessed by a US-based software provider, could also come under the Patriot Act.