The L*earning* K*urve*

Is Cloud Computing Pie in the Sky?

Computing may be moving off premises and becoming a utility.
Cloud computing is not quite here yet but its simplicity from the user's point of view makes it very attractive. Nevertheless, there are significant legal and technical problems primarily of security and privacy that need to be resolved before cloud computing can come into universal use.

What exactly is Cloud Computing?
The central idea behind cloud computing is that data will no longer be stored on the hard drives of the office servers, desktop computers or laptops but offsite on a network of servers accessed through the Internet for a fee. The word "cloud" comes from the use in the IT industry of the simple image of a cloud to represent complex telephone networks or the Internet itself.

Types of service
The cloud model could offer several types of service. For example, Software as a Service (SaaS) would let you load a single application onto your home or office computer that would allow you to log into a web-based server hosting the programs you need such as word processing, accounting, data base, storage, games, etc. Platform as a Service (PaaS) would let you design your own application which would run on the service provider's infrastructure and be delivered to users via the Internet. There would be many other services available to manage security, spam, email, and so on.

Pay per Use
As currently conceived, the comparable business model of cloud computing is that of the utility industry. Instead of having a generator in your basement producing power for all the needs of your home or business, you access the energy grid and draw off the amount of energy you need on a pay-for-use basis.

Middleware
Through a process called server virtualization, a special kind of software known as middleware would maximize server capacity utilization. Middleware can divide the capacity of individual servers into virtual environments so that each physical server functions as multiple servers. The result is greater server efficiency because less capacity is wasted, as happens now. The dedicated servers making up the cloud computing system would have all the applications society would need for work or play.

The host system would be owned by a company that would charge you some type of fee for providing your customized service.

Benefits
The primary benefit is that your infrastructure, training and licensing costs will be substantially reduced or even eliminated. Hardware costs would be reduced because there would be no need to buy and house increasingly powerful computers as your business grows.

The programs formerly run by your in-house IT system would now be on the cloud network servers. The space currently occupied by servers and storage devices would now be freed up for more productive uses. If you are currently renting space to house your servers, that expense would be gone. Increased capacity would also be available on the host's servers as needed. Server virtualization on the cloud system would ensure you are not paying for overcapacity as you might be doing now with your in-house system. All you need is a basic computer, cloud-enabled appliance (e.g., television), mobile phone or tablet device capable of running the external server's interface software which might be as simple as a web browser.

Server security
Time-consuming decisions about buying and complying with expensive software licences will be a thing of the past. You will no longer have to worry about who is and who is not covered by your existing software user licences. With cloud computing, you will no longer require licences; the company will have access to the programs it needs on a fee-for-service model.

Easy access
The cloud servers would be accessible from anywhere on the planet through the Internet. But you will not have to worry that sensitive company information might be compromised if a USB or laptop is lost by an employee on a business trip; all the information would be on the server and not on the hard drive of the laptop.

Reduced IT Staff
With software managed by the offsite server company and only basic computers required onsite, the expense of in-house IT personnel will be substantially reduced. Fewer IT personnel will be required by your business and those who will be needed will cost less because they will not need the training now required to run complex in-house systems. The good IT jobs will be with the server companies.

Concerns
Cloud computing could, in effect, double your security risk: once in-house and once at the remote servers. When servers are located in-house as they are now, you know where the data is stored and can access it and maintain it physically. You can design an authentication system of user names and passwords to control access to your own servers.

This can be supplemented with an authorization system which allows users to access only the applications and data needed for their particular job.

In the cloud system, on the other hand, you as the client do not know where the vendor's servers are physically located and who has access to them. They may even be located in a jurisdiction outside Canada where privacy and security laws are not as tight as they are here. You also do not know the effectiveness of the vendor's security system. In other words, you do not have complete control over the storage and use of your own data, yet current privacy legislation makes you responsible for the security of your clients' personal information. The best that can be said at this time is that you will still need in-house security at your end but the server companies will need to develop a level of security that will give their clients confidence that they are not in violation of Canadian law. It is obviously in the server companies' best interests to do so since they depend on the trust of their clients to keep themselves in business.

Where are we going?
Computer systems are becoming so complex that new ways of organizing the relationship between system and user is inevitable. The number of computing devices in use and the complexity of each new device are both increasing rapidly and putting pressure on the architecture of existing systems. Cloud computing as a utility is not yet a sure thing but it is looming larger and larger as a potential solution.