Every Cloud has a silver lining...

Highlights

While the Legal framework is sufficient in Luxembourg to allow for Cloud Computing Adoption, some models, such as the "Private Cloud" and "Shared Private Cloud", are better fit for the typical constraints of the Luxembourg Banking sector. IBM announces today several offerings that can help customers in Luxembourg to realize the potential of the Cloud.

Contents

Today's discussion is that IT needs to become smarter: Traditional IT infrastructure has reached a breaking point. In distributed computing environments, up to 85% of computing capacity sits idle. Meanwhile, resources that could be spent driving innovation are being used to maintain these inefficient environments. At the same time the words Cloud Computing are everywhere. There are a lot of articles and events talking about it, analysts are seeing the future of IT in it. It seems the Luxembourg market is hit by a Cloud mania.

Here are some of the key questions that are in the minds of many CIOs of Luxembourg today:

- How do I keep pace with the rate of innovation in the new economic environment?
- Is IT aligned with the business and can IT help me compete against new competitors?
- Is Cloud Computing a reality in Luxembourg today?
- Is it compatible with the highly regulated market we live in?
- What Cloud consumption models are appropriate for my organization? How can I keep it in line with local regulation regarding data privacy and confidentiality?
- How can I get started with Cloud pilots?

This paper will explore those questions and show that it is time to start thinking differently about infrastructure.
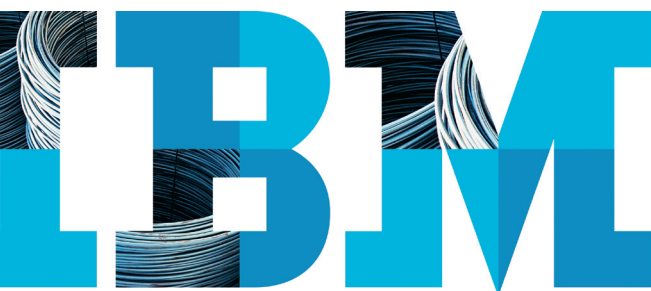
"The legal framework in Luxembourg is today sufficient to allow for Cloud Computing Adoption even by the Financial Sector, on the condition that the solution is an enterprise Cloud established on the territory of Luxembourg."

David Hagen
Head of IT Supervision and Support PFS at CSSF

What is Cloud Computing?

It is not easy to give one single definition of what "Cloud Computing" is. At the very base, Cloud Computing is as a new model for consuming and delivering IT Services, inspired by consumer Internet services. It exhibits a number of key characteristics: on-demand self-service, ubiquitous network access, resource pooling, rapid elasticity and a "pay per usage" model. How these characteristics are implemented depends on the chosen model:

- In a Private Cloud, IT activities/functions are provided as a service over an intranet, within the enterprise and behind the firewall. The access is limited to the customer's network, it drives efficiency, standardization and best practices while retaining greater customization and control.

- In a Public Cloud, IT activities/functions are provided as a service over the Internet. This model implies a standardized offering, consumption-based pricing and multi-tenancy.

- The Hybrid Cloud is a combination of the two previous models: internal and external services delivery methods are integrated, with activities/functions being allocated based on security requirements, criticality, architecture and other established procedures. IBM distinguishes the "Shared Private Cloud" model, where several IBM customers share a Private Cloud operated by IBM.

Today's discussion is in fact about three topics: It is first about delivering "services" and service management: the growing complexity of IT systems demands that sprawling processes become standardized services that are efficient, secure and easy to access. A Service Management System will provide visibility, control and automation across IT and business services to ensure consistent delivery. A consistent, trusted service will drive lower operational costs, unlock productivity and ensure security.

It is also about optimizing workloads: workload characteristics will drive the rate and degree of standardization of IT and business services. Complex transaction and information management processes, for example, will likely present challenges and risks of migration to standardized services. Other workloads will move faster, presenting rapid return-on-investment and productivity gains. For most enterprises, the best opportunities will be clear.

Finally, it is about deployment choices: In that context, the word "Cloud" is often used to describe new consumption and delivery models. Regardless of terminology, it is clear that these new models are emerging for the enterprise – even if they were first inspired by consumer Internet services. Self-service, economies-of-scale, and flexible sourcing options – new choices of deployment – define these new models.

With the head in the Clouds…

The very word "Cloud" does not necessarily project the right image, especially on the Luxembourg financial marketplace where confidentiality and control are highly regulated. This "new way" of deploying IT Services may -at first- not even seem compatible with the constraints of most companies established in Luxembourg. As in many cases, appearance may be deceiving, but several obstacles remain nevertheless.

As a matter of fact, when compared to the traditional computing model, the most basic questions seem all of a sudden a lot less easy to answer, especially in the "Public Cloud" model. A few examples:

- Where is my data located? On what server or infrastructure is it stored?
- Who has control?
- Who backs it up? How resilient is it?
- How do auditors observe? What about our security team?

How do Clouds create business value?

There are a number of different ways that Cloud Computing can drive business value. In addition to lowering the cost of IT, Cloud can help provide access to new markets and enable new business models. The full potential of Cloud is much more than a cost-focused ROI model.

Cloud value drivers have the potential to transform business strategy in the following ways:

- Driving business innovation with a large number of new applications developed with newly affordable Cloud development environments.
- Increasing business responsiveness.
- Lowering total cost of ownership and improving asset utilization.
- Providing an open and elastic IT environment.
- Optimizing IT investments.
- Enabling real-time data streams and information sharing.

Cloudy with a chance of…

While the benefits of Cloud Computing often are evident to the business, it is a common understanding that new technologies always introduce new thread vector and new risks. As such, the "external" aspects of the Public Cloud do exacerbate concerns regarding visibility and control, but also regarding privacy and accountability regulations that may, depending on the workload type, discourage the adoption of certain Cloud models.

"Highly regulated or sensitive proprietary information should not be stored or processed in an external Public Cloud-based service without appropriate visibility into the provider's technology and processes and/ or the use of encryption and other security mechanisms to ensure the appropriate level of information protection."

Gartner
7/09

Indeed, the adoption of a Cloud Computing model depends on the type of workload. Low risk workloads, applying one-size-fits-all approach to data protection, with no significant assurance, or workloads where price is the key decision criteria fit the standardized Public Cloud offerings very well. Mission-critical, high value or high risk workloads on the other hand, need direct visibility and control, significant level of assurance and a quality of protection adapted to the risk. Those requirements are best met with a "Private Cloud" model, or a "Shared Private Cloud" model.

"Large enterprises should generally avoid placing sensitive information in Public Clouds, but concentrate on building internal Cloud and hybrid Cloud capabilities in the near term."

Burton
7/09

This is best illustrated with the case of a bank operating on the territory of Luxembourg. A bank must observe a number of principles regarding the confidentiality and privacy of its data. If that data would be placed in a Public Cloud, several concerns could be difficult to address:

- Confidential data must remain on the Luxembourg territory and not leave the borders; already in 2003, the CSSF annual report detailed data confidentiality and privacy. As we can find in the CSSF annual report of 2009, this is not easily compatible with a Public Cloud model, where the data can virtually be anywhere around the globe. Even if we assume that the data was encrypted, where would the decryption key be stored? The logical place would be in Luxembourg, but there is a juridical risk: many countries have laws that require the decryption key to be available for any data present on their territory. The recent discussion between Research in Motion (BlackBerry) and several Asian countries is a good example of such risk.

- Traceability and control can be an issue: at all time, one should be able to indicate where a specific transaction has taken place (what system, what processor, what software component). This is not necessarily a functionality that is available in the Public Cloud area.

- How to guarantee the security of the data, something that remains the bank's responsibility?

- How to guarantee the recoverability of the data, from the technical but also from the legal point of view? Being in the Public Cloud does not mean there are more backups of the data; it is not obvious to understand how data in the Public Cloud is protected against corruption or even a disaster scenario. On the other hand, from the legal point of view, recovering data can be a problem in case the provider goes bankrupt, especially taking the multi-tenancy into account.

Luxembourg data privacy in the Cloud

In a broader scope than the financial sector, one could wonder how the concept of privacy and personal data fit into the Cloud. Where would/should such data be located? Where should it be processed and on what condition?

In Luxembourg, the CNPD ("Commission Nationale pour la Protection des Données"), a governmental independent agency, is tasked to control the processing of personal data and ensure the compliance with data protection regulations (mainly the amended Act of 2nd August 2002).

Generally, companies that want to handle person-related data have the obligation to declare their intention to the CNPD. They need to respect certain rules and principles regarding people's privacy such as people's rights to be informed and to access data related to them, technical and organizational measures in order to safeguard the security and confidentiality of the data stored and processed, or the principles of legitimacy and necessity. However, there are two major exceptions where the notification is not necessary:

- Particularly "sensitive" processings require a prior authorization by the CNPD.

- Certain processings being "innocous" or where other legal provisions guarantee a sufficient lever of privacy don't need to be notified at all, provided that certain privacy safeguards are being observed.

In the case of Cloud Computing, the same rules apply as for other data processings. However, an extra emphasis needs to be laid on the technical and organizational measures mentioned previously.

The Act of 2002 defines "Personal data" as a piece of information (in whatever form) that concerns an identified person or a person that can be identified. But this concept of "personal data" is not always as clear as one could imagine. Applied to the distribution sector for instance:

- A list of Customer IDs specifying what they have bought (how often and at what price) falls under the law, as customers can be tracked back using their ID, even if their name is not present in the list as such.

- The same list can become anonymous by simply removing the customer IDs. It can be replaced by statistical data, for instance a simple count of how many customers have bought certain products. As there is no possibility to track buying behaviour to individuals, this is not considered as personal data anymore.

While it is not the ambition of this document to provide a comprehensive analysis of the Act of 2002, there are a few basic concepts that are important in the context of Cloud Computing:

- There must be a clearly defined finality for storing/processing the personal data. The data should not be kept longer than the finality requires. In other terms, once the data is not needed anymore, it should be deleted.

- Interconnecting several sources of personal data can only be done under certain conditions.

- At all times, the person that is responsible for the data must maintain its security, confidentiality, integrity and availability. In the same line of thoughts, access to the data should be traceable (proof). There is a possibility for this responsible person to subcontract the handling of the data; that subcontractor is contractually bound to the responsible, in a way that reflects the legal obligations.

- The data owner should be clearly informed about his personal data: what is stored, for what purpose.

Storing and processing personal data can only be done under strict conditions, as mentioned previously. Quite obviously, it is also required for a data processor (physical or legal) to be established on the territory of Luxembourg, in order to be subject to the legal system. This can however become more complex if one plans to have activities done outside of the territory of Luxembourg.

Storing and processing the personal data is possible within the European Union; one of the conditions is that a representative of the data processor should be defined in all the countries where the data is located/processed. At all times, security, confidentiality, integrity and availability of the data must be maintained and evidence can be requested.

On the other hand, authorization to transfer personal data outside the European Union depends on the level of protection that the target country can guarantee. In certain cases, it is subject to prior authorization.

Needless to say, this can have severe implications for some Cloud Computing models, such as the Public Cloud model; it requires not only to know at all times where the data is processed but also to limit the geographical locations where it happens.

Opportunities for Luxembourg

While the legal framework in Luxembourg is quite elaborate on the concepts of personal data, there are some definitions that are perhaps not as current as they should be. Indeed, the law defines a "responsible" person and a "subcontractor". Those concepts are mixed (from the responsibility point of view) and can be subject to confusion; perhaps the terms "responsible" and "accountable" would be more appropriate.

For the financial sector in particular, Luxembourg already benefits from a unique legal framework that allows Cloud service offerings to be offered, provided the offering is an Enterprise Cloud established on the national territory.

Indeed, the IT service providers that have a support PSF status ("Professionnel du Secteur Financier") 29-3 and 29-4 of the Act on the financial sector, are allowed to handle confidential data of financial institutions and are also subject to the same obligations as their clients. As a consequence, the PSF companies must ensure the confidentiality of data, the traceability of operations and the security of the systems. In addition, the prudential supervision of their financial situation by the CSSF should prevent any sudden bankruptcy that would endanger the continued existence of stored data. The support PSF are therefore ideally positioned to offer Cloud services.

From left to right: Mr Pierre Weimerskirch, Membre de la CNPD, Mr Pascal Lanser, General Manager of IBM Luxembourg, Mr David Hagen, Head of IT Supervision and Support PFS at CSSF.

For Luxembourg, it would be appropriate to extend the assets of PSF support out of the financial sector, establishing a legislative framework for the protection of customers in the Cloud. This framework could provide transparency of the services, guarantee a segregation of the resources and data protection. It could also provide the insurance of recovering customer data in case of bankruptcy, by excluding Cloud Computing assets from seizure by creditors and by providing a liquidation period for the transfer or takeover of data by the customer or a third party of his choice. To allow for a free market, it would be desirable to create a voluntary accreditation for a regulated Cloud activity, leaving the possibility for companies to offer either simple Cloud services, or more specific and controlled services.

How IBM can help

IBM, next to the international "Public Cloud" model solutions (www.ibm.com/cloud), offers a variety of options to Luxembourg's companies who want to take advantage of the Cloud Computing concept, but are concerned about the security or legal implications. We can work with your enterprise to discuss your issues and relate how others are using Cloud in the current environment to meet their challenges. Here are a few services IBM is announcing today for the Luxembourg market:

IBM Consulting Services –
Cloud Infrastructure Strategy and Design

You need to have a clear strategy and plan for the right Cloud model for your business, when to implement it, which workloads to migrate and how to ensure a smooth, successful transition.

IBM consultants use a unique Cloud adoption framework and the IBM Cloud Workload Analysis Tool to help you analyze your existing environment and determine the Cloud Computing model best suited for your business. Our specialists can help you identify the business areas and workloads that, when migrated to a Cloud Computing model, can enable you to reduce costs and improve service delivery in line with business priorities. We work with you to develop an actionable road map that can help you evolve toward the selected Cloud Computing model.

IBM CloudBurst

The IBM CloudBurst™ solution is designed from IBM client Cloud implementation experiences and integrates the service management software system with servers, storage, and Quickstart services to enable a Private Cloud in your IT environment. It takes the guess work out of establishing a Private Cloud by pre-installing and configuring the necessary software on the hardware and leveraging services for customization to your environment. All you need to do is install your applications and start leveraging the benefits of Cloud Computing, such as virtualization, flexibility, scalability and a self-service portal for provisioning new services.

IBM CloudBurst provides an alternative to traditional IT infrastructure for IT executives seeking to enhance delivery of services and to transform the data center into a cost-effective Dynamic Infrastructure. IBM CloudBurst is "Built for performance", based on architectures and configurations required by specific workloads. It enables the data center to accelerate the creation of services for a variety of workloads with a high degree of flexibility, reliability and resource optimization.

While IBM CloudBurst is a pre-packaged solution it is important to note that it can take advantage of the entire IBM service management portfolio. In addition, CloudBurst can either be operated by the customer themselves or by IBM Luxembourg Managed Services.

IBM Shared Private Cloud Services in Luxembourg

IBM is building a Cloud in Luxembourg to offer a variety of services to the regulated market:

IBM Smart Business Desktop:
IBM Smart Business Desktop Cloud Computing services helps you provide "anytime, anywhere" access to applications, information and resources.

For organizations that need to provide simplified, secure access to information and reduce IT cost, complexity and energy consumption, IBM offers desktop virtualization solutions using Cloud Computing that centralize a distributed client environment, help safeguard data and applications, and help increase business flexibility. IBM desktop virtualization solutions help reduce the cost of desktop hardware and management, and integrate hardware, software and services. With comprehensive services including assessment and planning, design and implementation, managed services, and a subscription-based hosting service, we can address your organization's unique needs.

IBM Smart Business Storage Cloud:
As data volumes grow and the ability to handle various file formats becomes more complex, supporting efficient and cost-effective access to data can be increasingly difficult, with users experiencing reduced performance and outages. IBM Smart Business Storage Cloud can help you successfully deploy high-performance, scalable storage-virtualization solution to facilitate growth and innovation at lower operational costs.

IBM Smart Business Development and Test Cloud:
Setup of your development and testing environment often encompasses multiple, diverse IT assets and requires significant staff and budget to support ongoing configuration and management. This complexity can result in long development and testing cycles that delay your product launches. IBM Smart Business Development and Test Cloud helps you assess, plan, design and implement a flexible development and testing Private Cloud environment to help save capital and operating costs as well as reduce test cycle times, complexity and risks. A self-service test platform, which is designed for ease of use, combines service request management, automated provisioning and configuration management, providing you with on-demand provisioning of physical and virtualized test resources – including IBM and non-IBM components such as operating systems, middleware, storage, network, images and data. This helps you reduce capital expenses while gaining a dynamically scalable development and testing environment to meet changing business needs.

For more Information
http://www.ibm.lu
http://www.ibm.com/cloud

CSSF Annual Report 2009:
http://www.cssf.lu/uploads/media/RA2009_eng.pdf

Public Site of the CNPD:
http://www.cnpd.public.lu/fr/index.html

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