Risks and Benefits of Cloud Usage

With the advent of the cloud and its growing popularity, a few questions are on everyone’s mind. Is it secure, will it expand as I need, is it affordable, and is it stable? While these questions are directed at the cloud as an ambiguous entity, they are really directed more at the applications running within the cloud. Each application is programmed with different languages, frameworks, uses and expandability in mind. Even the database used to store the information must be taken into account and tested to see if they will keep up with the demand.

Luckily the Cloud is not as scary or ambiguous as everyone originally thought. It’s simple and stretches and conforms to the users needs without much work. Corporations that specialize in Cloud services like storage and infrastructure have developed business plans to help out their end users get started. These plans assist in infrastructure needs, software deployment and development and even simple data storage. All of the choices and options come as either subscription based plans or pay as you go.

Introduction

Software and other important services were available only on stand-alone machines for the longest time. We were used to the idea of running down to the store to purchase a copy of an application or game only to go back home, install the software, and run it locally. With the advent of a planet wide network allowing users from across the globe to interact in real time another option has become increasingly available, Cloud deployment. By means of a centrally located server, users essentially dial into the server housing the application and use another computers’ resources. This eliminates the fear of whether or not it would run on a local machine, substituting local power for a basic Internet connection.

The benefits of a Cloud based application go beyond personal computing needs, large corporations also gain the immense benefit of having another company solve network infrastructure issues and “rent out” computing power as the company requires it. If a business has the occasional or even one time need for a large influx of computing
needs, it’s much more economical to pay for the temporary service rather than to purchase the equipment, configure it properly, maintain, hire staff to oversee its implementation and maintenance. It’s clear that the costs for a single project can be overwhelming, especially when Moore’s Law is taken into account that all of this newly purchased hardware will be out of date in 18 months.

Maxis’s newest launch of SimCity on March 5, 2013 both benefitted from and failed because of the Cloud; the game was only available with an Internet connection but the servers simply could not handle the initial load. Poor planning is to blame for the issue but within two days of their launch they had increased server capacity by 120% after initially disabling certain game features to reduce the server load. This is a prime example of how the Cloud can quickly grow to accommodate user needs but also demonstrates the problems when it’s not able to expand fast enough (Katsarelis).

Previous works

Before the software can properly run, the hardware must be configured to expand and retract as the need arises and declines. For this the placement of the virtual machines on the servers in their physical locations and on a network can vary the usability of the software. Performance goes down when there are more virtual machines running on a single physical server, but as a company increases the hardware then the costs associated with operation go up as well. (Aboulnaga) Aside from the way the servers are configured, even the placement of the servers around the country makes an impact on availability and speed. When it comes to social networking and the use of the cloud in storage and application deployments user generated content is shared amongst their friends who are typically within the same geographic location. (Wang)

Clouds come in a variety of flavors from public to private and combinations of the two. In addition to types of clouds there are also a variety of benefits that the cloud sports from allowing agile deployment, reducing IT costs and removing a chunk of capital investment from the company’s budget. All of these benefits are in turn supported by the variety of services that the cloud allows for. Infrastructure as a Service allows for a company to store data and process information, Software as a Service provides a cloud style interface for the customers letting them connect to a program stored in the cloud rather than on the individual’s hardware. (Charan)

Corporate Clouds

Corporations have an underlying reason for everything they do, to make money or to save money. A bad reputation means less money coming in, security breeches mean less money coming in and possibly some going out, and even a slow connection time has
the possibility in losing business. It is for these very reasons that some companies choose to use the power of the cloud either for software hosting, infrastructure, or data storage and it is for those same reasons others stay away. Information and reliability and the assurance of each play a huge role in service providers and the way businesses interact. (Arnburst)

Data storage can be expensive and surprisingly elastic, companies like DropBox work solely in storing information for its customers. For a small fee users can rent a large portion of space compared to the smaller free version. This information is then stored in the cloud and is accessible anywhere an Internet connection can be made. Data storage goes beyond being easily accessible but also offers an added benefit of being backed up off site. If a hardware failure, natural or man-made disaster occurs or someone simply deletes the information on hand it could be devastating to the company, if that data had a proper off site storage then business could resume fairly quickly.

Infrastructure as a Service still has larger companies slowly coming over but smaller companies have embraced the idea as a cheaper and faster way to deploy applications and do business as a whole. When a company has a growing need for computational power they can either purchase the equipment and man power to configure everything only for it to be out of date shortly thereafter or use a cloud based pay as you go service. Researchers and animators require varying amounts of hardware depending on the project and it isn’t always cost efficient to purchase the hardware when an elastic option exists. This option allows for a company of any type to rent out the virtualized computers from a cloud service provider for a nominal fee computed by the number of virtual machines and the allotted time in which they are being used.

Paired up with the use of the cloud comes a variety of other expansions, with data stored in the cloud, computing done in the cloud, why not deploy applications there as well? That’s exactly what companies are doing when it comes to deploying their applications to a remote site. Companies that provide a PaaS (Platform as a Service) provide their clients with database tools, a web server, and even an environment for executing and testing code. Developers create their program and then apply it to their account with the intent to allow their own customers to have access to it. From there the customers access the application without the need to install it on their own machine. With the benefit of maintaining a single and centrally located application, developers are able to update the coding and apply patches as needed without interfering or having to worry about individual users system resources.

Companies like Netflix have been able to take the PaaS version of the cloud and use it in a large scale way. From being born in the cloud to multiple revamps and structure changes, there has been very little impact on the average consumer aside from seeing a new layout or different icons. When the change was made from using a
Windows Media Player plug-in to using Silverlight, the only real change to the consumer was either a small download if they had never installed Silverlight for any other application prior to this occurrence or they were now able to use the Instant Play ability on account that they used an operating system that did not support the WMP plug-in.

Cloud security comes in to play when everything is up and running and then suddenly comes crashing down. Security must take into account hackers, crackers, viruses and worms along with physically securing the hardware and keeping it safe from natural disasters. In keeping with traditional security measures Cloud security is no different, those servers are still made up of the same hardware as a local server but typically have an extra layer of virtualization that must also be configured properly to prevent certain disaster. In keeping with the Cloud nature all of the end-clients’ data should and normally is backed up in an additional location to prevent or at least minimize downtime.

**Personal Clouds**

Cloud usage offers users all of the same things that corporations are able to benefit from even though only a handful of features are of any real use. Data storage, platform services, and infrastructure support are still available to individual users but the vast majority of users will stick with the data storage aspect even if they don’t realize that their data is in the Cloud. Cloud use has become an integral part of our online lives to the point that Google, Facebook, Netflix, DropBox, and others don’t seem like a mysterious term spouted off by technologists.

Personal Cloud usage typically remains in the data storage aspect, E-mail usage, DropBox, and even the company’s network drive are all used in a very similar way; off-site data storage you can access from other computers. It’s that simple, Clouds can be big, small, public, or private but certain aspects must be held true to be a Cloud system namely by being accessible from multiple computers. In the simplest of terms an old unused computer could be used in a home setting to store files, connect it to the Internet along with a few protocol settings and you now have your very own private Cloud.

One of the most widely used conditions of being a Cloud is the data storage. Users really just need a safe and secure way to store documents, music, and photos for backup and to take with. Many users enjoy sharing their property either in person or online and using the Cloud is the simplest way to do so. Imagine having a plethora of music, movies, and photos that may need constant digital access to, so this rules out burning the data onto physical media like CDs or DVDs and external hard drives which can become quite costly if the demand for space is high. Granted purchasing the hardware is a one time cost where using companies like DropBox or Google Cloud Storage charges a monthly fee based on the amount being used; generally after a year it’s
The added benefit of the subscription model over the small capital investment is the lack of hardware failure, increased availability and reduced cost for temporary uses.

The majority of individual users will refrain from using IaaS, may venture into PaaS, but will primarily stay in the SaaS realm. Students and budding programmers are more apt to venture into the PaaS sections of the Cloud gaining access to platform services like coding libraries and development platforms. This allows users to easily and quickly develop programs and even deploy them into the Cloud they are using. The infrastructure usability has a small appeal to end-users on such a small scale but may be appealing to those wanting to create test networks on a slightly more physical scale than by using simulation software.

Summary

The benefits of using the Cloud can be overwhelming for short term uses but those looking at a long term investment may be better off investing in the capital. This is true for both corporate and personal clients looking to expand their computing abilities. Security and assurance in the availability still weigh heavily and for some it’s too big of a risk to give up the control on storing the data or having another company process it. Ideally the Cloud makes a good backup but relying solely on one avenue, Cloud or local, is never a good idea, should one fail having an additional source for the data allows for everything to keep running smoothly.

Future Work

An in depth study into different companies making the transition from local servers to having a Cloud based presence and the reduced overhead and benefits versus the headache and subscription fees will give more insight and slightly more compelling argument to the handful of large corporations to make the switch.
Bibliography


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