

Cloud Computing

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- Paulina Hoang

Introduction

Imagine a world where “eventually, like the smart house in the TV series Eureka, your devices will learn about you and eventually intuit what you are doing, where you are going, and what you intend to do when you get there. Think of all this as helpful... not creepy” (Tadjer, 2010, p. 1).

This is the future that cloud computing is expected to bring to us. Cloud computing gives the capability of connecting and accessing all your pertinent data, both personal and professional, from any online source (Tadjer, 2010, p. 1). Essentially, it is having all of your data in one place, known as the “cloud”, and having the power to easily access it anywhere and everywhere you go and at your own convenience. You will be able to mine, organize, and share your data with just a quick click of a button (Tadjer, 2010, p.1). This paper will further explore cloud computing: it will define and explain cloud computing, its advantages and disadvantages, the security issues involved, and the implementation of cloud computing. Many of us are already using simple forms of cloud computing without even knowing it.

Background

Two examples of very basic cloud services are Facebook and Twitter. You can access your Facebook or Twitter accounts online using a computer or your smartphone. According to Steven Guggenheimer, corporate vice president of Microsoft’s OEM division, the basis of cloud computing is to “to get content to behave consistently across a range of very different devices” (Tadjer, 2010, p. 2). So how does cloud computing exactly work?

Technically, cloud computing is when “remote machines owned by another company would run everything”; this includes everything from email services to social networking applications to corporate software applications (Strickland, 2008, p. 1). For example, when a

person signs up for Gmail, Google is providing the remote machines that run Gmail's emailing service which it is providing to its users. According to Strickland (2008), "the only thing the user's computer needs to be able to run is the cloud computing system's interface software, which can be as simple as a Web browser, and the cloud's network takes care of the rest" (p. 1).

To break it down in simpler terms, cloud computing consists of two parts. The first part is called the "front end", this is the data that the user of the cloud receives or sees (Strickland, 2008, p. 2). The second part is called the "back end"; this consists of all the machines, servers, computers, and various components that create the "cloud" (Strickland, 2008, p. 2). These two parts put together makes up cloud computing.

Potential Benefits

Cloud computing brings a new era in computer technology. This new technology brings with it many advantages to its users. Here are five advantages that cloud computing offers:

1. Significantly lowers costs. Cloud computing lowers the costs of having to maintain and manage your own hardware, software, and the various technical components that would otherwise be needed to function without the cloud (Miller, 2009, p. 1). It also reduces the costs involved with software updates. Software applications available through the cloud are automatically updated and available for cloud users (Miller, 2009, p. 1).
2. "Improved document format compatibility" (Miller, 2009, p. 1). Cloud users do not have to worry whether their documents will be compatible with different operating systems or applications (Miller, 2009, p. 1). Cloud users will be able to view, edit, and share documents of all different formats with other cloud users.
3. "Unlimited storage capability" (Miller, 2009, p. 1). Cloud computing offers to its users vast amounts of storage capability (Miller, 2009, p. 1). A cloud user no longer has to rely on the

limited space available on his/her computer's hard drive; they can use the limitless space available on the cloud (Miller, 2009, p. 1).

4. Increases convenience and mobility (Miller, 2009, p. 1). Cloud users are able to work from any location they want and can access all their data without having to be at a specific location or area (Miller, 2009, p. 1). The only thing needed is an Internet connection and cloud users will have full access to the range of applications, software, and data that is stored on their cloud.

5. "Device independence" (Miller, 2009, p.1). According to Miller (2009), the biggest advantage to cloud computing is that users are "no longer tethered to a single computer or network...your existing applications and documents follow you through the cloud" (Miller, 2009, p.1).

Legal, Ethical, and Social Issues

Cloud computing is still fairly new which means it has room for improvement. There are still many issues with cloud computing that concern people and prevent them from embracing this new technology. While cloud computing can provide many benefits, there are also potential disadvantages to it as well. Here are three issues and concerns regarding cloud computing:

1. Privacy and confidentiality. According to White (2010), "By using a cloud system, your company's sensitive data and information will be stored on third-party servers, and you will probably have very limited knowledge or control regarding this information" (para. 5). This becomes particularly important for cloud users who have a lot of extremely confidential data such as healthcare providers and credit card companies. It is a legal issue because if this data is not handled correctly or falls into the wrong hands, these companies will be held liable.

According to Brady (2010), as a result of these privacy concerns, "lawyers are and will be challenged to provide competent advice that safeguards their client's most important information" (Outsourcing and Ethical Concerns, para. 1).

2. The possibility of encountering unresponsive or unwilling cloud providers. Should the cloud provider become unresponsive or unwilling to continue providing service, cloud users will be left in a huge dilemma (White, 2010, para. 4). This is especially difficult for small businesses that use the cloud. According to White (2010), “their small size and limited resources makes these companies much more vulnerable to some of the risks associated with cloud use...Many small companies are not able to mobilize their lawyers effectively in this way, and thus they may not be able to quickly cure or mitigate such nonperformance by the provider” (para. 6). Therefore, it is important that before companies or people begin using cloud computing, they spend time researching and selecting a cloud provider who is reputable and reliable (Brady, 2010, para. 9).

3. Not being able to monitor or control data movement. Since third party providers are the ones actually handling the data, cloud users often do not have the ability to monitor or control where the data is stored and when or how it is moved. According to Brady (2010): “There must be protocols in place to ensure that one company’s data is not commingled with data from another company. Moreover, there must be systems in place to prevent data being improperly accessed or removed by an unauthorized user. For purposes of litigation, location of data might be a critical factor in determining what law applies to the dispute or how easy it is to access the information” (What are the risks?, para. 2).

Security Concerns

When handling vast amounts of confidential and important data, security is a prime concern for both cloud providers and cloud users. Cloud users want to be sure that their data is being protected and securely handled. Cloud providers also know that “security is a key determinant for success” (Binning, 2009, How cloud hosting companies have approached security, para. 3). In addition, cloud computing is still a fairly new field and therefore it does not

have any specific standards or protocols with regards to security (Binning, 2009, How cloud hosting companies have approached security, para. 4).

Since cloud providers are the ones who actually handle and manage the data, it is hard for cloud users to monitor and control how the data is handled. The first main issue with security is the privacy and confidentiality of the data being kept on the cloud (White, 2010, para. 5). The main concern with this issue is the risk of data falling into the wrong hands or being misused for other purposes. Cloud users want to be certain that their data is being kept secure and confidential. The second main issue with security is the movement and handling of data by cloud providers (Brady, 2010, para. 2). Cloud users are not able to monitor and control how their data is being handled or kept. It is also difficult to know exactly where their data is being stored (Brady, 2010, para. 2). There are risks of data being mixed up with other cloud users' data or data being mishandled which can result in loss of data (Brady, 2010, para. 3). These are the two main security issues with cloud computing that cloud providers are still looking to address.

Implementing Cloud Computing

Many people are still hesitant about embracing this new technology and there are many reasons why. People who are new to cloud computing and are just being introduced to it may feel overwhelmed with the numerous choices of cloud computing solutions being offered (Golden, 2011, p. 1). There are a few steps potential cloud users can take to ease their anxiety of jumping into this new field.

First, they must spend time researching and educating themselves on the cloud computing solutions being offered as well as the numerous vendors who offer these solutions (Golden, 2011, p. 2). They must know what they are looking to accomplish with cloud computing as well as find a reliable and reputable vendor to carry out these goals. Second, they should “implement limited,

non-critical functionality” when first using the cloud (Golden, 2011, p. 2). This means that when users are just starting out using the cloud, they should not completely switch everything over to the cloud so that the user becomes dependent on the cloud to function. Users should start slowly by testing out a few things on the cloud so they can get adjusted to cloud computing. Third, and finally, users should “**circumvent cloud infrastructure dependence**” (Golden, 2011, p. 2).

This means having back-up plans in place should the cloud fail. According to Golden (2011), companies should strive to “insulates one's applications from direct dependence upon a particular cloud implementation” (p. 2). That way, should the cloud fail, the company will still be able to function and carry out its tasks. By doing these three things, it should ease users into using cloud computing with confidence and makes the transition a lot smoother and easier.

Conclusion

Cloud computing is a new frontier that we have yet to fully explore and develop. It is a new era in computer technology that will dictate the future of computer use. Although there are still a few issues and concerns to work out with cloud computing; one cannot deny its usefulness and effectiveness. Many computer technology companies are beginning to recognize that there is a need for “a new kind of operating system for a new computing world populated not by a single style of desktop computer, but by dozens of different kinds of Internet-connected appliances ranging from smartphones to mini-laptops called netbooks” (Markoff, 2008, para. 2). Cloud computing will continue to grow and expand as well as the need and demand for these types of services. In the same way that computers have changed the way people live life, so too will cloud computing.

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