

## Cloud Computing

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**Introduction:**

The purpose of this paper is to gain a better understanding of cloud computing. Cloud computing allows clients access to any of their documents, photos, contacts or emails from any location at any time from third party storage. While cloud computing has many potential benefits there are many risks associated with entrusting an outside entity with your data. “There is a good chance you’ve already used some form of cloud computing. If you have an e-mail account with a web-based service like Hotmail, Yahoo! Mail or Gmail, then you’ve had some experience with cloud computing (Strickland, 2008).

**Definition:**

Cloud computing is defined “as internet-based computing in which large groups of remote servers are networked so as to allow sharing of data-processing tasks, centralized data storage, and online access to computer services or resources” (Dictionary.com, n.d.). The reasoning for calling it a cloud goes back to the early days of internet computing where the image of the cloud is what people referred to when trying to explain where the information was coming from. Tadjer’s article indicates that the “IDC (International Data Corporation) came up with a handy checklist to determine whether or not something should be called a "cloud" service.

**Key Cloud Services Attributes:**

- Off-site, third-party provider
- Accessed via the Internet
- Minimal/no IT skills required to implement
- Provisioning = self-service requesting; near real-time deployment; dynamic and fine-grained scaling
- Pricing model = fine-grained, usage-based (at least available as an option)
- UI = browser and successors
- System interface = web services APIs
- Shared resources/common versions (customization "around" the shared services)” (2010)

**Background:**

Despite the fact that the term cloud computing has only become mainstream over the last several years, its concept dates back at least four decades. “Today’s cloud originated because the typical enterprise application was too bloated and required too much maintenance or support” (Tadger, 2010). Consumers needed a way to have the most current computing options without having to continually update their hardware or software. “The concept of cloud computing can be traced back to the 1960’s when John McCarthy opined that ‘computation may someday be organized as a public utility’” (Khan, Khan & Galibeen, 2011). McCarthy’s concept was that consumers could be charged for their computing power much like they are for phone services. The government and some businesses have taken advantage of the cloud technology for years. It is now trickling down to the personal consumer. Some current cloud based service providers are Apple’s icloud, Google, Amazon and Microsoft. These companies store information on their servers to be accessed by consumers. Most providers offer free storage for a defined amount of space. Additional storage can be purchased from the provider at various rates.

**Layers of Cloud Computing:**

There are two components of cloud computing; the front end and the back end. The front end is the computer user and the applications used to access the cloud via a web browser. The back end is the cloud itself which is the computers, servers and data storage devices (Khan, Khan & Galibeen, 2011).

**Cloud Services:**

There are three main types of cloud services; SaaS, PaaS and IaaS. SaaS, Software as a Service, provides already created applications as a remote service. Examples of SaaS would be Microsoft’s hotmail or Google’s gmail. PaaS, Platform as a Service, provides facilities for

application design, development, testing and hosting. Examples of PaaS include Google's AppEngine and Microsoft Azure. IaaS, Infrastructure as a Service, provides hardware services like storage and virtual servers. Examples of IaaS would be Amazon and Rackspace (Wang 2010). With many different types of cloud services, a consumer is likely to find one that best fits their needs.

**Potential Benefits:**

The main benefit of cloud computing for the personal consumer is obvious; the ability to access your information at anytime from anywhere on any type of device connected to the internet. The personal user will also have less need to buy the fastest and largest computer because they will not be keeping the majority of their information on their PC. There are many benefits for businesses as well. Using cloud computing greatly reduces the expense of an IT department within an organization. It reduces the amount of money spent on hardware and software as well as the expense of having personnel on staff to maintain and repair those systems. Cloud computing allows businesses to connect to their data without being tied to a brick and mortar location. Corporations do not need to lease large office space; their employees do not need to come into an office or even live in the same state because they can work from wherever they are.

**Legal Issues:**

Most of the legal issues of the cloud deal with security. The provider has personal and corporate information that covers everything from banking information and customer information all the way to private health information. The problem comes in as to where the actual service provider's server is located. Laws that apply in America are not necessarily adhered to in other countries. "Physical location prescribes jurisdiction and legal obligation. Country laws governing personally recognizable information vary greatly. What is acceptable in one country

can be a violation in another” (McEleney, 2011). Cloud providers need to be very cautious in where they decided to place their servers for the sake of their customers.

**Ethical Issues:**

The ethics of cloud computing storage are the same as in any business; honesty, integrity, trust and security. The provider you are dealing with must make sure they are in control of the information at all times. They must do their part to secure their system not only from outside attacks but those breeches from within.

**Security Issues:**

“PCI (Peripheral Component Interconnect) Security Council Standards report states that ‘cloud security is a shared responsibility between the cloud service providers and the client’ (Crosman, 2013). Both parties need to take the necessary precautions to make sure the information is protected, encrypted, password protected, they use virtual private networks (VPNs) and sufficient firewalls are in place. “Cloud storage is safe provided you warehouse your sensitive information with a reputable firm.” (Bertolucci, 2012). Providers should also have a plan of action for information restoration in place in case of disaster or system failure.

**Social Problems:**

“The cloud has upended traditional communication models, and the world is changing as a result. In the past, communications was one-to-many, whether for newspapers, radio, TV. It was the way companies give information about their products and governments communicated with the populace. Today the model has been inverted: now we have many-to-one communication (think Twitter and Facebook), where the page owner can issue a message, and hundreds, thousands or millions of people can respond. The result is a new transparency as people communicate with

politicians, pop stars and anyone on the public stage in a very open way” (McEleney, 2011).

This to many is viewed as a positive and while it can be it could also be seen as a negative. Too often in offices or classrooms all across the world people are facebooking, tweeting or playing games instead of focusing on the task at hand. The population as a whole is losing connection with their peers by being connected. Cloud computing is making life so much easier you don't ever have to leave you home. You can order groceries, clothing and entertainment with the click of a mouse. You don't even have to leave your house to deposit a paycheck anymore; just take a photo with your smart phone and the money is credited to your account.

**Conclusion:**

We have only just begun to fully understand and utilize the cloud. Cloud computing is an evolving technology and business which is expected to continue to grow as more providers offer this service. As more providers enter the marketplace, the consumer can expect to see more competition to gain your business. It should also be expected that with the introduction of more competition a code of standards be implemented to guarantee the client the most secure and reliable service possible.

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