Principles of Information System

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**Executive Summary**

Cloud Computing has made life easier by storing all sorts of data online instead of storing data locally on the hard disk. Cloud computing also provides various other services such as Software as a service (SaaS) in which software is hosted and the fee is deducted every month for the centrally hosted software. Another service is Infrastructure as a Service (IaaS) in which the data storage service is provided to the other users and the third one is Platform as a Service (PaaS). Cloud Computing is beneficial for people because of its different services. It allows users to set up virtual machines where they can use another operating system from another location in the world. It connects businesses by allowing companies to share data with each other. At the same time, It has many disadvantages such as data leakage risks and many other technical issues.

**Introduction**

Cloud computing is the data management and accessing it online without direct management by the user. In simple words, cloud computing is known as storing the data over the internet instead of the computer's hard drive. Cloud computing emerged in the early 1980s due to the efforts of computer scientists to store data online. However, it got popular when Amazon started its cloud services at the beginning of the 21st century. Cloud computing has made it easy for users to access data anytime, anywhere in the world. Users can upload their important documents, images and videos on their cloud account (Sadiku, e.t al, 2014). Apart from that cloud computing provides various other cloud services such as Software as a service (SaaS), Infrastructure as a Service (IaaS) and Platform as a Service (PaaS). Each of them has different attributes and provides a completely different service than others. This report will discuss cloud computing services, its types, advantages and disadvantages including security issues and enabling technologies.

**Body**

 **Cloud Computing Services**

Cloud computing services vary from one category to another such as developers' services, virtual machines, and data storage services. The most commonly used are data storage servers which can store huge data online which can be accessible easily (Sadiku, e.t al, 2014). There are three main services of cloud computing: Software as a Service (SaaS), Infrastructure as a Service (IaaS) and Platform as a Service (PaaS). Many companies use both (IaaS) and (PaaS) cloud services for their customers. Similarly, many programmers and application developers use PaaS.

**Software-as-a-Service (SaaS)**

It is the most famous and commonly used cloud computing in which software engineers and application developers host their applications or the applications of their customers. The data of these applications is stored online which is used to run these applications. SaaS makes it easier for customers to access the data every month as a subscription fee ("What is Software as a Service (SaaS)? - Definition from WhatIs.com", 2019). SaaS service can be accessed via a web browser and it requires user authentication and login. Each user has different login credentials to access their data and it is secured with the HTTPS protocol mostly.

**SaaS Advantages and Disadvantages**

It is user-friendly, easy to use and provides a complete interface to update the data and debug it. It is cheap as compared to other models. Data security is a major drawback of SaaS and data is transmitted slowly.

***SaaS examples:*** E-commerce websites like Amazon, Google, Shopify, WordPress and tawk.to are some of the examples.

**Platform-as-a-Service (PaaS)**

It includes a combination of hardware and software tools online which are used to create applications. To create applications everything is provided to the user and they just drag and drop stuff to save their time. PaaS is the best business solution for those looking to create unique applications without spending any high amount of money. It saves a lot of time and effort in creating applications (Rajan, et al, 2011). Users don't have to spend hours writing code. Moreover, users aren't required to worry about the software updates and testing side of the applications.

**PaaS Advantages and Disadvantages:**

PaaS is used by software developers only hence it is limited to developers only. However, it saves time, provides regular updates and freedom of choice. Similarly, security is a huge factor in PaaS, data dependency on the vendor is also another issue.

***PaaS examples***: Microsoft Azure, Apache Server, WordPress, and Magento Commerce Cloud.

**Infrastructure-as-a-Service (IaaS)**

IaaS provides services of networking and virtualization where users can get cloud-based solutions such as storage servers, virtual machines. Therefore, users aren’t required to invest in expensive solutions. It often requires to purchase physical hardware and then IT contractors are necessary to keep the system up to date. It is useful for all kinds of business and suits all kinds of budgets ("What is Infrastructure as a Service (IaaS)? - Definition from Techopedia", 2019).

 **IaaS Advantages and Disadvantages:**

The advantage consists of low hardware cost, easy to connect and implement. Similarly, disadvantages include dependency on the service provider and compulsory data connection which makes things complicated at times.

***IaaS examples***: Google compute Engine and Digital Ocean are examples of IaaS.

 **Types of Cloud**

**Based on a cloud location, we can classify cloud as:**

* Public
* Private
* Hybrid
* Community cloud

|  |  |  |  |
| --- | --- | --- | --- |
| Public | Private | Hybrid | Community Cloud |
| The whole computing infrastructure is located on the premises of a cloud computing company that offers the cloud service.
 | Hosting your entire computing infrastructure yourself and is not shared. The security and control level is highest while using a private network. | Using both private and public clouds, depending on their purpose. You host your most important applications on your servers to keep them more secure and secondary applications elsewhere.
 | A community cloud is shared between organizations with a common goal or that fit into a specific community (professional community, geographic community, etc.). |

**Advantages and Disadvantages of Cloud Computing**

**Advantages**

Cloud Computing has various advantages for all kinds of businesses. First of all, users don't need infrastructure support and its super easy to maintain their own data servers to host a large amount of data. It's easy for users to create applications without needing a development environment (Avram, 2014). Most importantly it is very cheap and users can save a huge amount of money annually. The data is easy to access and the data transmission rate is very fast as well. Users can communicate with other computers geographically and access data in real-time.

 **Disadvantages**

One of the biggest concerns of cloud computing is security. The date can be stolen by hackers since it is available online. Therefore, it is important to store data on the servers of trusted service providers (Avram, 2014). Similarly, another disadvantage is the complete dependency on the provider. The data migration is also very difficult and requires high-speed internet and there are chances of data being accessed by hackers.

**Conclusion**

In a nutshell, cloud computing has the potential to change the world by saving time and providing data storing services online. Making robots and storing their data on servers, not a problem these days. Almost all the IT services these days use cloud computing because of its low-cost solutions to the business. At the same time, doubts of the user regarding data safety are correct and there are no data standards to protect the data on cloud computing. Company has created their standards to and therefore users are always worried about their data protection. Cloud computing is a technology of the future and once the data protection issue is resolved through the laws, more people will start using cloud computing.

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