Investigation into Adoption Rates and Security Breaches in Cloud Computing Infrastructure

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Abstract - *The study is focused on "Cloud computing research. "There is a brief discussion of "Cloud Computing" types. Therefore the research is mainly about the problems or the issues of "Cloud Computing". Security is the key problem and advantage too. The research will show the analysis on these purposes.*

Key Words: **Cloud computing, security breaches, adoption rates, cloud services, cloud services usage**

1. INTRODUCTION

A service offered by the internet or "cloud" is "cloud computing." It may be argued that using distant servers makes it easier to access and store data. Local hard drives or exclusive data centers are used in this system. Before this system was created or used, people had to purchase servers to continue doing their jobs. Thus, it created such obstacles for the organization to acquire sufficient data. When employing "Cloud Computing," there are certain serious issues that arise. With the development of new technology, these issues are growing. and an increase in data. The challenges that will be examined hereunder are described here. This research paper will provide a concise evaluation of this subject along with many other facts.

2. THE SERVICES OF CLOUD COMPUTING

Cloud Computing" has some major components for using the system (Cao *et al.,* 2020). These are three major components, and these are "Client Computers", "Distributed Servers" and "Data Centers".
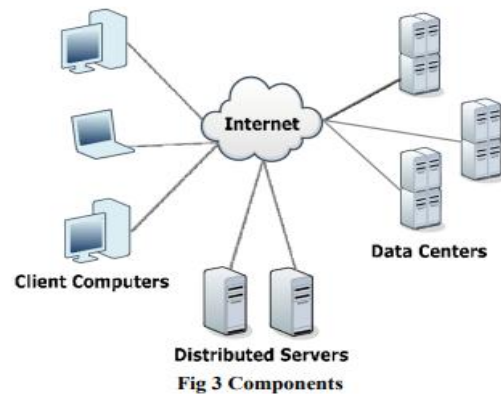

Fig 1: Services of Cloud Computing

(Source: https://www.researchgate.net/profile/Rizwan-Khan-27/publication/326073288_A_Review_Paper_on_Cloud_Computing/links/5b3c841fa6fdcc8506eef9de/A-Review-Paper-on-Cloud-Computing.pdf)

Table-1: User rate of Cloud Computing

User of "Cloud Computing"	The rate of usage (%)
Microsoft Azure	67
Amazon Web Services	57
Google	23
IBM Cloud	9
Industry-specialized cloud	7
Self-service	34
Other Public cloud	5
Who don't use cloud	4

3. EXAMPLES OF CLOUD COMPUTING

As per the research, "Cloud Computing" has many types. Basically, "cloud computing" has three types (Alouffi *et al.,* 2021). The types are discussed below.

3.1 Public Cloud

"Public Cloud" is a computing service that is delivered by a third party by the public internet. In this system, a user can pay for only the server that is particularly needed.

3.2 Private Cloud

The services that are provided for private use via the internet are under the "Private Cloud". These services are kept for some selected people or users (Buyya *et al.,* 2018). It provides a high level of security and privacy.

3.3 Hybrid Cloud

This is the combination of "private cloud" and "public cloud". In this system, the application worked like a sharing process of both clouds.
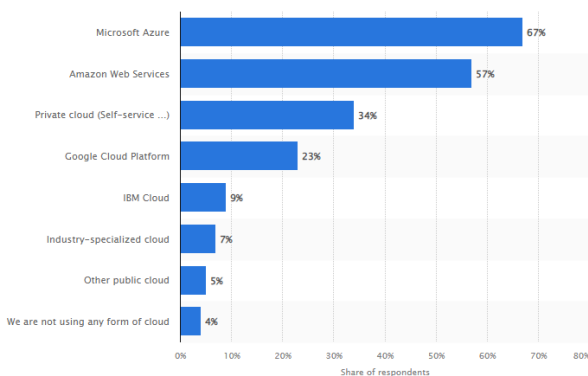

Fig 2: Adoption rate of cloud computing

(Source: https://www.statista.com/statistics/1224552/organization-use-cloud-provider-global/)

4. THE MAJOR ISSUES IN CLOUD COMPUTING

As per the research, here is the explanation of the major issues of "cloud computing". This system has many advantages. But as advanced technology is leading the world, some problems have been created in "cloud computing" (Alam, 2020). As the organizations pay for the usage of computing resources that are delivered in the cloud, it has to face some trouble with the solutions.

4.1 Outage of service

As the CSP controls the resources, the server can have the problem of downtime. It makes it challenging to work in the organizations or maintain the workforce at a time (Sun, 2019). This breaks the workforce.

4.2 Limited Flexibility

In IT sectors or management, the customers have no control over many elements like cybersecurity, inspection, networking, etc. (Sadeeq *et al.,* 2021). It reduces the flexibility of the infrastructures of IT that are used by the customer.

4.3 Security issues

Cloud resources are open to all, so it has no particular security or privacy. It is a high risk. Though cloud providers always think about security with their best practices, it is impossible for any type of public service to prevent security flaws.

4.4 Cloud security Breaches

This is the main problem that is faced by IT infrastructures, and it is proved by some surveys. Some say that it is the most secure technology, but it has some issues with it, too (Ali *et al.,* 2018). Actually, this is the difference in the problems for differentiation of the organizations.
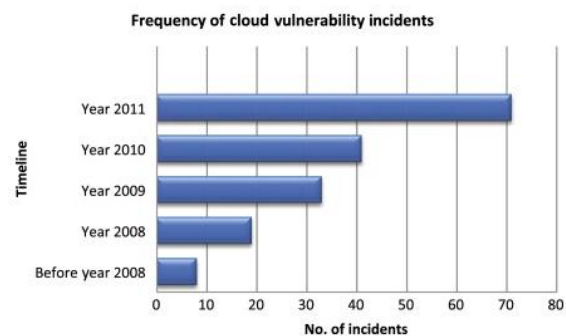

Fig 3: Cloud security breaches incidents

(Source: https://www.sciencedirect.com/topics/computer-science/cloud-security)

- Sixty-nine million users have the issue of hacking their accounts.

- Apple iCloud was hacked, and many private photos and information were leaked.

● Nearly 170 million email addresses and passwords have been stolen from the cloud.

These are the main problems that happen in "cloud computing". As per the research, it can be said that security is the major problem of "cloud computing" that many people have faced.

5. ADVANTAGES OF CLOUD COMPUTING

"Cloud Computing" has some benefits of using it. As per the survey, 64% of people say that it is a secured process. It is a data protection service which has more potential than any cloud provider. Security is a base that the data will not leak after a local disaster (Jauro *et al.,* 2020). It has a facility where it can store the data and provides a backup. It makes the data more secure. For many businesses, "cloud computing" is the one and only solution to make the environment secure.

6. CONCLUSION

According to the research, "Cloud Computing" is a useful process, but for some organizations, it presents some security challenges, making them less inclined to use it for business access.

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