

CLOUD COMPUTING AND SECURITY: NEW GENERATION NEED

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Abstract: Cloud computing is the delivery of computing resources, such as IT infrastructure or data center over the internet. This model allows business to rent storage space from a cloud service provider, instead of maintaining their own IT infrastructure or data center. This paper reviews about the concept of cloud computing, its organization and its security.

Keywords: Cloud Computing, Role Based Access, Cloud Data Access

1. INTRODUCTION

Cloud computing includes the delivery of tools and applications, like data storage, servers, databases and networking through the internet. Cloud storage does away with the need to store data on a local device, since it can be saved to remote servers. With simply an internet connection and any device, there's access to data and software programs. [1]

By cloud computing, you can save money and gain better efficiency, performance, and security. Cloud computing is an efficient way to store files and applications since it does not require the physical location of the user. The user can access the information from any device, even when they are out of office. [1]

Cloud computing allows you to use your devices to access your data because all of the necessary steps have been completed in advance and are stored on an external server. This means that you can complete any important work from anywhere. Cloud computing is both public and private. Public cloud services charge a fee, while private cloud services only provide their services to a limited number of people, as a system of networks that supply hosting services. A hybrid option also exists, which combines both public and private elements into the cloud service.[2]

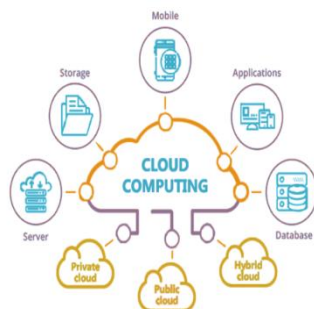


Fig 1. Cloud Computing

With the help of the cloud, millions of people can play video games all around the world. Healthcare companies and financial service companies use the cloud to create tailored treatments for all different people. [2]

2. BENEFITS OF CLOUD COMPUTING

- **Agility:** Creating a new business is easy with the cloud, which supplies you with an array of resources that you can use to be innovative and build something customized to your needs. You can feel free to turn these resources on or off as needed, such as storage services, Internet of Things, or data lakes. You can deploy technology in a matter of minutes, as opposed to before when it took hours. This gives you the freedom to experiment and differentiate experiences for customers. [3]
- **Elasticity:** Cloud computing allows you to increase and decrease the amount of resources based on your needs. You don't need to over-plan ahead of time for peak periods, and instead can scale up or down as those changes arise. Cloud computing empowers companies with instant scalability and agility in the cloud. [3]
- **Cost savings:** With the cloud, you can pay for IT as you use it, rather than with fixed expenses. The variable costs are much less than what you would spend on physical servers and IT yourself because of economies of scale.[4]
- **Deploy globally in minutes:** With the internet, you can have access areas from all over the world and reach more of your users. With a few clicks, AWS makes it easy for you to deploy in many different places and make your application accessible to more people. This helps reduce latency and improve the user experience. [4]

3. TYPES OF CLOUD COMPUTING

Cloud computing is a collection of services that offer you different options for how to make your company's everyday operations. There are three main types: Infrastructure as Service, Platforms as Service, and Software as service. [5]

- **Infrastructure as a Service (IaaS):** IaaS cloud services give you control over your IT's network and

computing resources. With IaaS, you can manage the most basic features for a successful cloud infrastructure. IaaS closely resembles the IT and developer resources that are already in place. IaaS is infrastructure as a service, where you have access to infrastructure resources which allow you to take advantage of resources when needed. It's provided on demand and they are pay-as-you-go. IaaS is one of the many types of services that the cloud offers, with others being software as a service, platform as a service, and serverless computing. IaaS is the basic layer in cloud computing, and there are many examples such as: Microsoft Azure, Google Compute Engine (GCE), Amazon Web Services (AWS). [5]

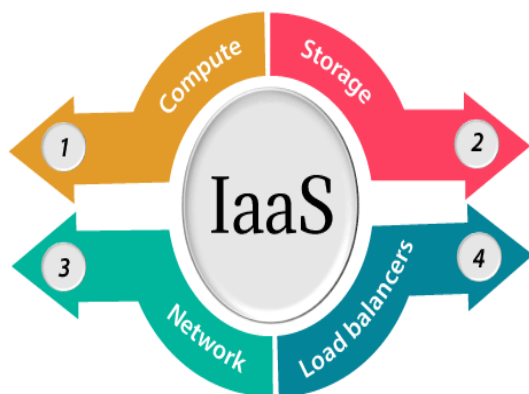


Fig 2. IaaS

Platform as a Service (PaaS): With PaaS, you can deploy and manage applications by avoiding managing operating systems and hardware. You are free to focus on application deployment and maintenance. PaaS is a cloud computing model where developers use third-party software and hardware tools, hosted by the PaaS provider. Humans do not have to install any hardware or software in order to run new applications. [6]



Fig 3. PaaS

Software as a Service (SaaS): SaaS can likewise be software as a service. This is typically end-user applications that you would use on the web, such as inbox applications. You don't need to worry about hosting the application or how it is managed, all you need to do is use the service that they offer. With SaaS, you don't need to worry about how the service is maintained or how the underlying infrastructure is managed; you only need to worry about how you would use it. A software-as-a-service (SaaS) model allows individuals to access cloud-based services over the Internet. An example of this is email, calendaring, and office tools such as Microsoft Office 365. This model provides a complete software solution which you can purchase on a pay-as-you-go basis from cloud service providers. [6]



Fig 4. SaaS

4. CLOUD SECURITY

Cloud computing is a type of online storage. More specifically, it is the delivery of different services through the Internet which includes things like data storage and software programs. People and businesses use cloud computing because they save money, they increase their productivity, they get fast response times, and they have better data protection. [7]

Cloud security is essential for those who are concerned about the safety of their data. Data in the cloud may be more secure because cloud service providers have superior security, and their employees know more about security. On-premise data can be vulnerable to malware or social engineering; it is less likely to be breached however if the guardian of the data is experienced with security. [7]

Cloud security refers to measures we can take to protect our digital assets via cloud service providers. Businesses need to protect their data when implementing cloud-based tools and services. If a company succeeds in its digital transformation

strategy, it will use the cloud-based services as part of its infrastructure to continue digital transformation. Security is an important concern when accessing the cloud. Data is stored on a third-party server and accessed over the internet. In the cloud, visibility and control over data is limited and it can be really hard to protect your data. [8]

When using the cloud, it is important to protect your data from security threats and have full control over the access there. With a company like Microsoft Office 365 or Amazon Web Services, for example, the customer is always responsible for protecting their data from threats of any kind. There are many risks when handling cloud computing, but the most prevalent are related to data. This can include a lack of visibility to data, inability to control data, or theft of data in the cloud. These risks make up the top three issues with cloud security as they affect enterprises around the world. [8]

By outsourcing computing over the Internet, you can get a variety of services without the security risks. The best way to protect your data is to set up 2FA, VPNs and other firewalls. [9]

Cloud security is a top priority for cloud storage providers, who must satisfy the demands of their users while also following regulations. Third-party auditors check their security systems to ensure that data is safe. [10]

Many factors can be the cause of security breaches in an online business, such as data loss, account hijacking, insecure API's and cloud storage providers. Furthermore, if you use shared technology to process your business' data on a server that is not secure, it may put your company at a greater risk for being hacked. These attacks are designed to take down a service with overwhelming data so that users cannot access their account. It's an ever-evolving threat to cloud security. [10]

5. CONCLUSION

These networks have potential applications in industrial, transportation or buildings areas as they can offer significant benefits such as improved reliability and energy performance optimization. Wireless Sensor Networks offer many types of applications for a comfortable and cost-effective intelligent life. Using wireless networks, we can monitor air, noise, and health care.

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