CLOUD COMPUTING AND IT'S SECURITY ISSUES

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ABSTRACT

Cloud Computing is a general term for anything that involves delivering or providing services over the Internet known as 'Cloud'. CloudComputing is one of the most trending and popular technologiesin today's world because of its ability to reduce costs associated with computing and at the same time increases flexibility and scalability. But an interesting thing about this topic is that cloud computing is such a vast topic that ten professionals may have ten different explanation as to what it is and all of them might be correct.But it is also unavoidable that there are some major Data Security and privacyconcerns in Cloud computing. In this paper I would be explaining What is Cloud Computing, Types of Clouds,its models and as well highlight it's major Security issues.

KEYWORD: Cloud, Cloud computing, Paas, Saas,Iaas, Security issues

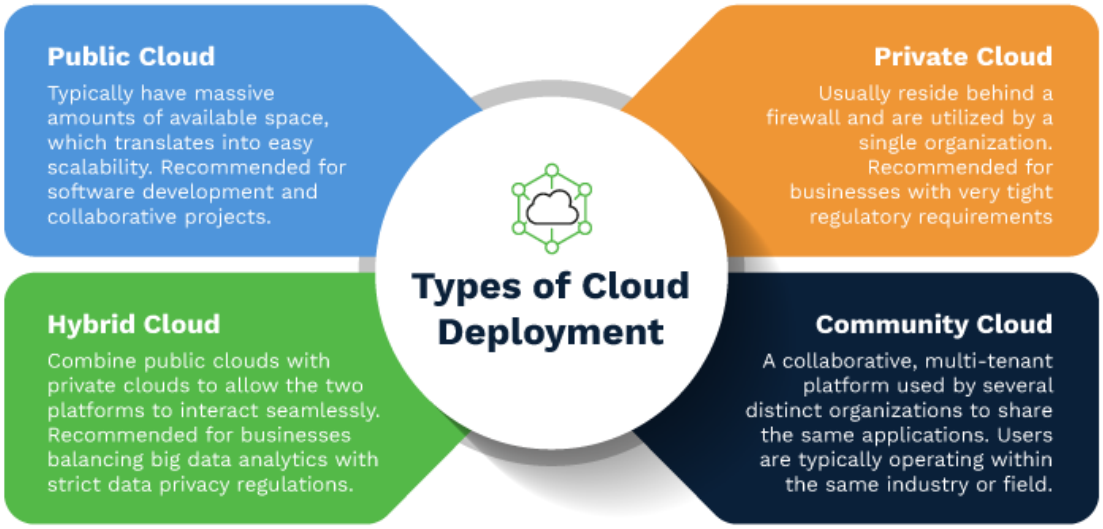
I.INTRODUCTION

The term Cloud refers to something that is present everywhere that can be accessed by anyone from any part of the world like Internet, hence the name Cloud Computing.In other words, we can say that Cloud is something which is present at remote location over network. Cloud Computing refers to manipulating,configuring and accessing the applications online through Cloud (over Internet). Cloud Computing has both, the components of software and hardware resources involved in it. Cloud computing provides everything like a service including storage(Saas), infrastructure(Iaas) and platform(Paas) for the users as per their requirements and needs. To make it more elaborate we can simply say that Cloud computing is the delivery of services including servers, storage,databases, networking and software over the internet("Cloud").Cloud provides services on a pay-as-per use basis offering agile,scalable and cost effective service.

II. TYPES OF CLOUD

- Public Cloud -> The public cloud allows systems and services to be easily accessible to the general public on pay-as-per use basis. It allows scalability and resource sharing.Public clouds are owned and operated by thecloud service providers, which deliver their computing resources like servers and storage over the Internet. Microsoft Azure, Amazon Web Services are an example of a public cloud.

- Private Cloud -> The private Cloud on the other hand refers to computing resources used exclusively by a single business or organization. Private Cloud can also be said as an internal cloud for a company that can be used only by its members and no other general public can have access to it. Private cloud is a more secure cloud system and has more control over its system as it is used by a selected group of people.
- Hybrid Cloud ->Hybrid cloud as the name suggests is a combination of both private cloud and public cloud. It creates a single environment to operate both the private cloud resources as well as public cloud resources thereby providing increased flexibility. In simple words we can say that in hybrid cloud, both private and public cloud is integrated providing the features of both in one single frame.
- Community Cloud ->Community cloud computing refers to the one in which a group of several orgnizations or companies share the cloud services. The organizations having the same concerns can share the resources in community cloud. The services can be hosted by a single or group of organizations belonging to the community or by some external third party as well.



III.LITERATURE REVIEW

SL.No.	TITLE	AUTHOR	FINDINGS	REMARKS
1.	A comprehensive study on cloud computing	Suruchee V. Nandgaonkar, Prof.A.B.Raut	Motivation factors of adopting cloud computing and reviewing different deployment and service models of cloud. It also explores certain benefits of cloud	In this study I got to know about the cloud architecture. Its deployment or service models where they are used

			computing over traditional IT services including scalability, flexibility etc	and why they are used.
2.	Introduction to Cloud Computing	Prof. Syed NehaSamreen, Prof. NehaKhatri-Valmik, Prof. SupriyaMadhukar Salve, Mr.PathanNouman Khan	What is cloud computing,why to use cloud computing and its architecture is explained.	A brief intro of cloud computing and the reasons explained to opt for cloud computing.
3.	Cloud Computing Review	Vivek Paul, SupriyaPandita, Prof. MeeraRandiva	Cloud computing deployment models and design principles are discussed.	The design of ckoud computing is well explained and its benefits also.
4.	Cloud Computing and Saas implementation	Sayali A. Ambavane, Ajay S. Pawar, Vivek H. Verma, PallaviMarathe	Cloud computing characteristics explained. A detail description of Saas implementation is given.	All the deployment models are explained.Saas requirements are well explained.
5.	A Survey on Cloud computing	ShyamPatidar; DheerajRane; Pritesh Jain	The buzz and trend of cloud computing is being talked about in this paper. The various benefits of cc is also explained.	Cloud computing has created a great impact on the tech industry around the world.
6.	Virtualization in Cloud Computing	T.Swathi , K.Srikanth , S. Raghunath	How virtualization plays an important role in cloud computing and its advantages.	Without virtualization cloud computing is inefficient and difficult to use.
7.	Services of cloud computing	KanusuSrinivasaRao, Ratnakumari	The services provided by cloud computing including Iaas,Paas,Saas,Naas.	All the services are well explained.
8.	Cloud computing and Security issues in the Cloud.	Monjur Ahmed and Mohammad Ashraf Hossain	Authentication in cloud and various security issues are	Security of data is one of the biggest

			explained very well.	concern in cloud computing.
9.	Data security in cloud.	K. S. WaghȦ , SwapnilChaudhariȦ , Anita DeshmukhḂ and PrajaktaKhandave	This paper also focuses on security issues of cloud.	Data security in cloud is the biggest priority for any user.
10.	A survey on security of cloud computing	VarshaYadav , PreetiAggarwaal	It focuses on security of cc mentioning some encrypting algorithms.	There are certain encryption algorithms and data partioning scheme for cloud security.
11.	Cloud Computing – Research Issues, Challenges,Architecture, Platforms and Applications: A Survey	Santosh Kumar and R. H. Goudar	Populer cloud computing platforms and comparison between cloud and grid computing.	This paper very well explains the issues of cloud computing also explaining security and privacy issue.
12.	Cloud Computing : Research Issues and Implications	M.RajendraPrasad,RlaxmanNaik	Cloud computing issues and implications are explained along with its basic architectures.	A brief and nice explaination of the security issues are mentioned.

IV. CLOUD SERVICE DELIVERY MODELS

a) Software as a service(Saas) :Saas is a service of the cloud in which the whole software is provided as a service on a pay-per-use basis over the internet. In simple words we could say that this service helps us to directly use the software via the internet instead of downloading it and then using it which makes our task simpler. Any software available can be used in this service.

Ex- Google apps, Dropbox

b) Infrastructure as a Service(Iaas):Iaas is also known as Hardware as a service. This service allows customersto rent IT infrastructure such as servers, networking, storage as a service as per demand.IaaS

cloud computing platform eliminates the need for every organization to maintain the IT infrastructure thereby reducing expenses.

Ex-Google compute engine, Digital Ocean

c) Platform as a Service(Paas): Paas is a service where a third party provider delivers hardware and software tools over the internet.It provides customer a platform to run,manage,test and debug its applications. A PaaS provider gives the user a platform to run all the hardware and software resources.Paas allows to avoid the complexity and expense of buying or managing a software.

Ex- Windows Azure, Google App Engine.

V. SECURITY ISSUES OF CLOUD COMPUTING

A coin has two sides, likewise every topic has two sides to it. We have read and known about various advantages of cloud computing, its benefits and how it has become one of the trending technologies of current era. But at the same time Cloud computing also has numerous challenges and issues, the most important among them are the security issues of cloud computing. It is considered to be the biggest barrier of cloud computing in its path of success. The security challenges for cloud computing are vast and enormous.Let us discuss some of the major security issues of cloud computing briefly.

i. MISCONFIGURATION -Cloud security controls are when inaccurately configured or lefi insecure leads to security misconfiguration putting our system and data at great risks. In simple words misconfiguration simply means that public cloud server resources are not configured in a better way hence making the system prone to breaches and attacks. Misconfiguration is one of the biggest and mostly ignored security issue of cloud computing. Most enterprises have security concerns due to cloud misconfiguration.

ii. UNAUTHORISED ACCESS – The other major security issue of Cloud computing is the unauthorized access of the system leading to intrusion and data breach. Account hijacking is usually caused by phishing attacks, password thefts and social engineering. Like unauthorized access, access from authorized users with the aim of harming the cloud can also be dangerous.These access makes it easy for any external user to cause data breach and affect the cloud security.

iii. DATA LEAKAGE– Ever since cloud computing came into existence sharing of data has become an effortless task. But this sharing of data is also a big concern for many enterprises because of data leakage and especially when it comes to important and sensitive business data there is a greater risk. Data leakage is possible in cloud as we all know cloud is a multi-user environment which also involves the participation of third party user which means the data can be viewed by anyone, anywhere.

iv. DISTRIBUTED DENIAL OF SERVICE ATTACKS – DDoS is a cloud specific attack which affects all the cloud layers. In this attack, multiple machines attack a single system or user by sending large amount of data packets which occupies the network with unwanted traffic thereby avoiding the user to access his/her resources. This attacks affects the system as well as the organizations using it as they are unable to access their data. Cloud data is shared over the internet which makes it prone to cyber attacks and all types of malware infections.

v. LACK OF VISIBILITY/CONTROL – Once the Organization or any user using the cloud services store all its data in the cloud or allows the cloud system provider to manage or maintain its data, it loses its control over the data and experience less visibility. They can no more track their data and loses its ability to verify their security controls. Like these there are several other issues that a company faces after using cloud services. When there is no transparency or control over data and resources, its all the more difficult to protect them from security breaches and cyber threats.

vi. INSECURE API'S–Application Programming interface allows cloud computing processes to flow, these APIs when left insecure can create an opportunity for attackers to harm the system and exploit important private data. Cloud APIs have become an easy source of target for attackers because these days every organization expose their interfaces to public for business partners to access therefore it is easily available on the internet and anyone can have access to those data and can exploit it in anyway possible.

VI. CONCLUSION

To conclude, Cloud computing is the most advanced and latest technology that has the potential to provide immense benefits, but still there are certain areas of concerns that require to be researched including security and privacy issues in Cloud Computing which still remains unanswered by many experts. However the fact is that Cloud Computing has a long way to go and is the next biggest evolution in IT industry. The big IT giants like Microsoft and Google are working on it and that day is not so far when all its security issues will be resolved.

Cloud Computing has already created its hype in all sectors,among the big and small industries, Organizations, Customers and soon it will be adopted by everyone around the world. Though it might have certain issues but we cannot deny the fact that Cloud Computing has marked the beginning of a new era in IT industry. Its development is at a nascent stage and there is still so much more potential in it yet to be explored.

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