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Review and Analysis on Security in Cloud Computing

A Research Paper Writing Proposal
Submitted by

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To

School of Computer Applications

In partial fulfillment of the Requirement for the
Award of the Degree of

Master of Computer Applications
Under the guidance of

Deepak Asija

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CERTIFICATE

This is to certify that Karamvir Singh (Reg No: 11303640), Mandeep Singh(Reg No: 11300108), and Kunal Kashyap (Reg No:11308276) have completed their MCA Research Paper Writing Proposal titled "Review and Analysis on Security in Cloud Computing" under my guidance and supervision. To the best of my knowledge, the present work is the result of their original investigation and study. No part of the dissertation proposal has ever been submitted to any other degree or diploma.

The proposal is fit for the submission and the partial fulfillment of the conditions for the award of the degree of Master in Computer Applications.

Date: ---

                                                          Signature of the Advisor

                                                          Asst. Prof: Deepak Asija

                                                          Lect. At Lovely Professional University

DECLARATION

We, the undersigned **Karamvir Singh**, **Mandeep Singh**, and **Kunal Kashyap** are the student of MCA Sem-4 hereby declare that our research paper "**Security on Cloud Computing**" presented in this report is our own work and has been carried out under the supervision of Asst Prof: Deepak Asija of computer Applications study.

This work has not been previously submitted to any other university for any examination.

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1. INTRODUCTION

Cloud computing is a collection of IT services and it provides services to their customers over a network on a leased basis. Normally these techniques are given by the third person who holds the infrastructure. Clouds are basically large central storage techniques through which we can store our data for this we not need to have big memory into our systems to store because Cloud itself provides storage facilities to every customer. Cloud is known as online storage device. Clouds services are easy to use also accessible virtualized resource. For organization cloud computing provides an adoptive IT services and also offers an innovative business models.

Security is one of the main issues arising these days in Cloud computing that needs not be handled as soon as possible. So, we have introduced some techniques into our project thorough which we can save our data from unauthorized user and from hackers also. Moreover, we tried to build a relation between CPs and customers. The main reason is the consumer has to be aware of risks of data breaches in this new environment. In this paper we also studied different views of different researches that are also included into our report. This paper gives an overview that what types of issues is faced by cloud computing security and challenges.

2. LITERATURE REVIEW

In paper [1], Rabi Prasad Padhy, ManasRanjanPatra, and Suresh Chandra Satapathy have shown different models of cloud and the risk in security and various issues that are present in cloud computing industries these days. In this research paper it describes that cloud give us pay-per-use facility through which we can have services from cloud .Cloud basically runs on internet. Moreover, it saves the time and cost of a customer. There are some security issues and main motive of this research paper is to aware customers about their security of data.

In paper [2], Diffie Hellman, and Neha Tirthani have shown contemplated architecture design for cloud computing, that insures the safe behavior of data at client and server. Basically they had shown their interest on three things authentication, key generation, and data encryption on cloud.

In paper [3], Kuyoro S.O, Ibikunle F, Awodele O have shown the complete types of cloud computing and services, also focuses on security issues and challenges. There basic concern is about security. Moreover, they shown two models one is multi-tendency and the pooled computing resources in cloud computing e.g., nowadays hackers are using these services as their cheaper source to store their data and they can plan for the attack in future.

In paper [4], Kevin Hamlen, Murat Kantarcioglu, Latifur Khan, and BhavaniThuraisingh has shown a scheme third person publication of papers in a cloud. Next they discussed some query processing with map Reduce and Hadoop. They also implemented XACML for Hadoop (Hadoop basically an application used to make the blocks).next they worked open encryption standards they told that it is important to every user to check whether the data is encrypted or not. They also used one term Cirrus which provides limited access on to their economic model, because does not provide hardware support.

In paper [5], Jaydip Sen has defined numerous facility and arrangement of Cloud Computing and classify three critical tasks. He also explained the (Gartner Hype-Cycle, 2012).

In paper [6], BhushanLalSahu, Rajesh Tiwari has shown comprehensive factors of adopting cloud computing and privacy issues, checkout the several cloud deployment and service models. Moreover, they also give more genuine view of scalability, higher resource utilization.

In paper [7], Kang chan Lee has shown the cloud security in terms of Cloud Security treats and Technical Components of Cloud Computing. He broadly focused on cloud services threats and how to prevent data loss and leakages. He also reviewed some concepts regarding cloud computing security.

In paper [8], Mladen A. Vouk has shown review of services focused on architecture reduce material skill above for end customer, greater flexibility and some concept of the issues it tries to address, related research topics, and a "cloud" application accessible nowadays.

In paper [9], Amar Gondaliya, has shown security worries arise in cloud computing environments and review some approaches to uphold integrity and realm security protection as virtual resources.

In paper [10], NirKshetr has publicized an environment of the architecture, and desirability and vulnerability as a cybercrime target are tightly linked to privacy and security and likewise explain privacy and security of cloud computing.

3. OBJECTIVE

The main Security objectives for cloud computing are:

- Defend postal Services of data from unofficial access, and alteration of data.
- Protect information resources from deliver chain threats.
- To protect cloud computing infrastructure need to avoid from not permitted user.
- Look after Internet browsers from attacks of hackers (who breeches information).
- Encryption standard must be high.
- Trust between CPs and customers' needs to strong.
- Supporting of portability and physical partition must be there between PCI and non-PCI applications.
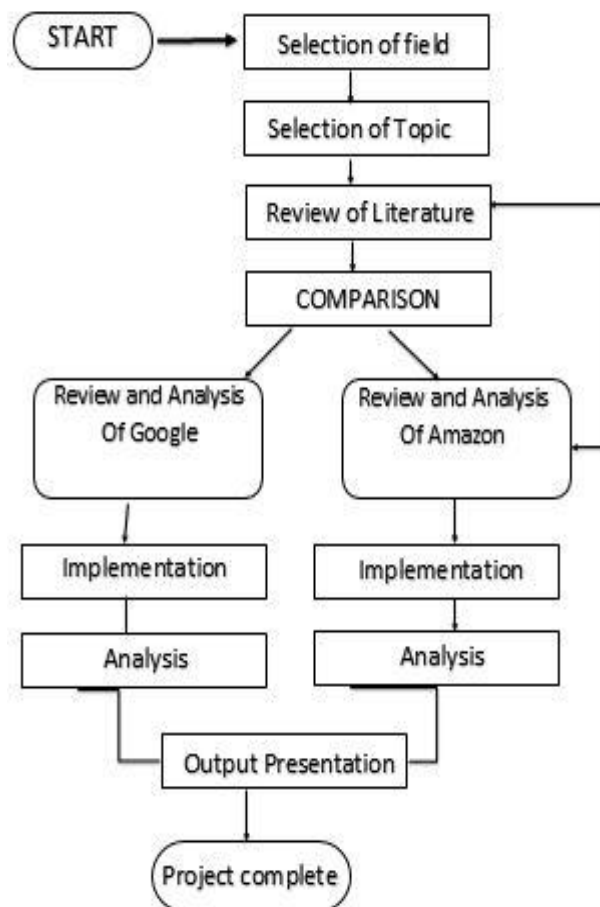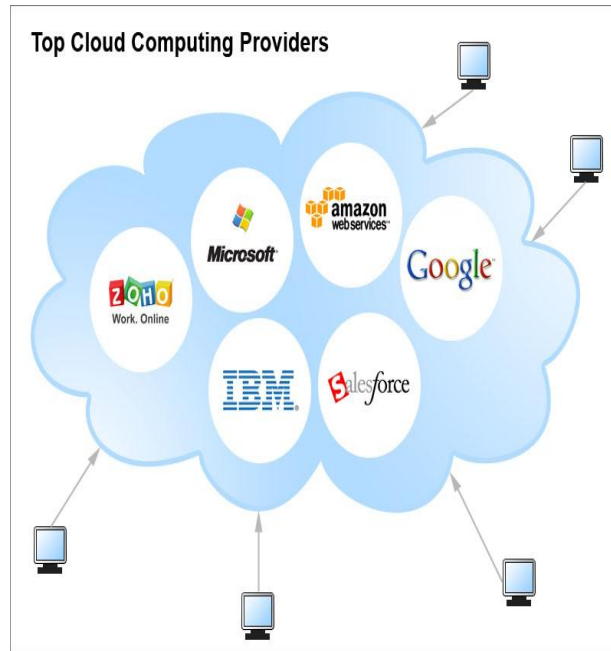
4. METHODOLOGY

Figure. 4

5. RESEARCH AND ANALYSIS

Top Cloud Computing Providers

5.1 COMPARISON STUDY OF GOOGLE AND AMAZON

HISTORY:

GOOGLE is founded by Larry Page and Sergey in March as a Research Paper as a research project both are Ph.D. students at Standford University.To explore of a new dissertation theme, Page had been in view of among other things exploring the mathematical view in front of the World Wide Web, understanding its link formation as a giant graph. His supervisor, Terry Winograd, boost him to pick this concept and Page focused on the problem of finding out which web pages link to a given page, based on the thought that the numberand nature of such backlinks was paramount information for an analysis of that page.

The AMAZON organization was started by what Bezos knows by the name **Regret Minimization Framework** this company exhibits it'sefforts to fend off any regrets for not participating sooner in the boom in Internet business at that time. In 1994, Afterwards Bezos left his job as vice-president of D. E. Shaw & Co., which wasbasically a Wall Street firm, and moved to Seattle. He began to work on a business plan for what would eventually become Amazon.com.Jeff Bezos incorporated the firm as "Cadabra" on July 5, 1994 and then they went online as Amazon.com in 1995.

Table 1: Google vs. Amazon background information

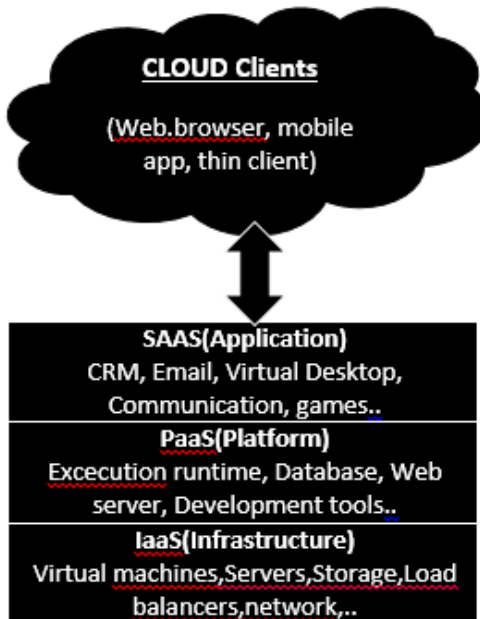|	GOOGLE	AMAZON
Launched	1995	1994
Ranking	3	6
Revenue(2014)	$15.42 billion	$88.988 billon
Type of site	Search engine	E-commerce
Type of service	Quick links	Online shopping

Table 2: Comparison Table

PARAMETERS	GOOGLE	AMAZON
DATA SECUIRTY	Google implement appropriate technical and organizational measures to protect customer against accidental loss. Google may update or modify such security measures from time to time provided that(a)such update and modification do not result in material degradation of the security of the services.(b) Google continue to adhere to such security measures then in effect.	The Payment Card Industry (PCI) information security standards and Data security Standards are define by the council of payment card industry. For the credit card payment we need a payment card industry certification. It is required to prevent from credit card fraud.
OPERATIONAL SECURITY	Vulnerability Management process that actively scan for security threats using a combination of commercially available and purposed built in house tools, intensive automated and manual penetration affords, quality assurance process, software security reviews and external audits.	We can say it as Physical access or operational security both are same and it is strictly control two things and those are at the perimeter and at building ingress point by specialized security organization utilizing video surveillance, interruption detection systems, and additional electronic means. Official members must pass two-factor validation a minimum of two times to access data center floors. Automatic fire detection and restraint tools have been installed to minimize risk. Power security, also provides climate and temperature security.
STORAGE SECURITY	Google provides object storage: • High level of durability and availability and performance.	In Storage security Amazon provides AmazonS3 which is (Amazon Simple Storage Service) that can be used

		only or together with rest of the AWS Services such as Amazon Elastic Compute Cloud (Amazon EC2). Adding to this, we have Amazon S3, which is you pay only for the storage you actually use. There is no minimum fee and no setup cost.
CLOUD LOCK	Protect your Data in Google Apps from Cyber security Threats and inadvertent misuse.	
PRIVACY	Google provides transport layer security and local file storage security. gsutil performs all operations using transport layer encryption(HTTPS), to protect against data leakage over shared network links. gsutil takes a number of precautions to protect against security. Note that protection modes are not supported by windows.	AWS warehouses are housed in ordinary facilities. Physical access is strictly controlled both at the perimeter and at building ingressintrusion detection systems, points by professional security staff utilizing video surveillance, and other electronic means. All physical entrance to datacenters by Amazon web services employees is logged and audited regularly. Two-factor validation a minimum of two times to access datacenter floors.
INFRASTRUCTURE SECURITY		Amazon's Applications handlesthe candidate develops and handles the software to automate IT process for hosts like (Linuxand UNIX)specially in the areas of third-party software delivery, internally developed software and configuration management. The Infrastructure team maintains and operates aLinux& UNIX configuration management framework to address hardware scalability, ease of use, auditing, and security management.

Near line Storage is a low-cost.
Integrity checking
Competitive and flexible pricing.

6.CLOUD COMPUTNG SERVICES

Three services provided by Cloud Computing:-

a.   SOFTWARE-as-a-SERVICE

Software as a Service is also called as "software on demand," that is used into the internet to run after a firewall on a native area network. In this services given by Saas are "pay-as-you-go" model, or at no charge. To use the applications of this technology need to access over the (**Internet as a Service**). SaaS was broadly deployed for sales automation and Customer Relationship Management (CRM). These days it is widely used in computerized billing, Human Resource management, collaboration invoicing, and content management.

b.   PLATFORM-as-a-SERVICE

Platform as a Service (PaaS) are related to rent hardware, OS, network capacity, and security over the internet. PaaS permits his customers to related services for successively existing applications and testing new once. We can change and upgrade frequently by the use of Paas. Different people from same field can work self-possessed on any software development projects.

We can have services from diverse sources that cross global boundaries. In PaaS we can reduce the cost also. There is one disfavor and that is risk of "lock-in" development languages.

c.   INFRASTRUCTURE-as-a-SERVICE

In Infrastructure as a Service is used to support operations, servers, networking elements, and storage. It provides or answerable for housing, running, and upholding. The client usually pays a (**per-use-basis**).

7. CLOUD COMPUTNG SECURITY ISSUES

CLOUDCOMPUTING made up of infrastructure, platforms and applications. Each segment provides different products for a business and each segment performs different operations according to the business requirements. There are many security issues for cloud computing covers many technologies including Operating System, virtualization, networks, Database, transaction, load balancing, memory management. Following are some security issues in cloud computing environment**:**
  ➢ Data Security
  ➢ Network Security
  ➢ Virtual Machine Security
  ➢ Data Integrity
  ➢ Data Privacy
  ➢ Data Segregation
  ➢ Data Transmission
  ➢ Access To Servers And Applications

8. SECURTY ISSUES IN CLOUD DEVELOPMENT MODELS

Three basic models of cloud computing are:

1) Private Cloud

In private cloud there are some services delivered by the cloud merchant are scalable resources & virtual applications.

2) Public Cloud

It defines Cloud Computing in the form of old core stream sense, where the properties aerodynamically provided on a self-service are above the internet.

3) Hybrid Cloud

It is also known as private cloud that helps to link more than one external cloud services. It provides more secured control of data.

9. FUTURE WORK

The above work is an analysis phase of our research paper and we here compare different security issues faced by Google and Amazon moreover we are trying to show the before and after changes of cloud computing of both organizations. We are also tried to show that the importance of security in user and cloud provides. Moreover, we try to show the importance

of security and its challenges. Basically security is that gives transparency, confidentiality. Over future work will show some of the solution to security issues.

10. REFERENCE

[1] Cloud Computing: Security Issues and Research Challenges Rabi Prasad Padhy1 Senior Software Engineer, Oracle India Pvt.ltd. Bangalore India.

[2] Data Security in Cloud Architecture Based on Diffie Hellman ,Elliptical Curve et al Cryptography M. tech. – Computer Science, Associate Professor (CSE), VIT, Chennai campus, VIT, Chennai campus.

[3] Cloud Computing Security Issues and Challenges. Kuyoro S. O. Understanding the Cloud Computing Stack SaaS, Paas, IaaS cloud 2013, Santa Clara.

[4] Security Issues for Cloud Computing Kevin Hamlen, Murat Kantarcioglu, et al, USA.

[5] Security and Privacy Issues in Cloud Computing Jaydip Sen. Innovation Labs, Tata Consultancy Services Ltd., Kolkata, INDIA.

[6] International Journal of Advanced Research in Computer Science and Software Engineering Research Paper. A Comprehensive Study on Cloud Computing Bhushan Lal Sahu, Rajesh Tiwari, et al. Department of Computer Science Department of Computer Science SSCET.

[7] Security Threats in Cloud Computing Environments Kangchan Lee Electronics and Telecommunications Research Institute.

[8] Cloud Computing – Issues, Research and Implementations Mladen A. Vouk Department of Computer Science, North Carolina State University, Raleigh, North Carolina, USA.

[9] Security in Cloud Computing: Hasmukh Goswami, Amar Gondaliya, et al.

[10] PRIVACY AND SECURITY ISSUES IN CLOUD COMPUTING Nir Kshetri Associate Professor the University of North Carolina-Greensboro, USA.