RESEARCH PAPER

TITLE – Cloud Computing: Security Issues And Challenges

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TABLE OF CONTENTS

ABSTRACT

Cloud Computing (CC) concept is not a new term in the present world. It has changed the business operations too much with its exceptional features or characteristics. If I talk about the term, it is originated from the diagrams exploited to symbolize the internet. Cloud computing (CC) has several benefits that may aid the business operation in several ways in gaining benefits. But, the business entity is now coming aware of several security challenges with the development of CC over time.

So, the primary task is how to deal with such issues. Such issues are also acting as a strong barrier to not opting for CC technology in the business environment by many firms. In this paper, I will present the background details of Cloud Computing (CC) as well as outline various characteristics, service, or deployment models. Here, I will also discuss several issues or challenges related to CC.

1. INTRODUCTION

1.1. Overview

CC has emerged as an innovative technology aiding firms in facilitating business operations in several ways. A user may access resources on-demand with the aid of this technology which is one of the significant characteristics of Cloud Computing (CC). If I introspect the Cloud Computing impact on the business operation, it has much changed or affected the firm tremendously.

Several big firms have already started working on the concept of CC and providing reliable, powerful, and cost-efficient cloud platforms. Organizations are reshaping their business models aiming to gain more profits from this technology. But, several issues still exist in cloud computing (CC) that need to be resolved. Security has become the key concern for the individual to shift to CC as per a recent survey done by CSA (Cloud Security Alliance).

In this paper, I will investigate the main issues of security related to Cloud Computing. In terms of the several applications as well as infrastructures, I will present the security concerns as CC refers to both the applications delivered as services over the internet as well as the infrastructures. Here are lists of security concerns that should be taken into account are as follows – Authorization, Integrity Control, Confidentiality, Availability, etc. Here are a few aspects that I will cover in this paper as follows:

- Outlining several aspects related to cloud computing covering features or characteristics.
- Reviewing various issues or challenges associated with Cloud Computing (CC).

1.2. Aim And Objectives

ASPECTS	DESCRIPTION
AIM	The study aims to outline the background details of CC along with the discussion of security issues as well as challenges.
OBJECTIVE	Various Objectives are: a) Presenting background details related to cloud computing. b) Discussing features, characteristics, service models, or deployment models related to cloud computing. c) Reviewing issues related to security linked with the cloud. d) Presenting various security challenges associated with the cloud.

2. CLOUD COMPUTING: DEFINITION AND CHARACTERISTICS

2.1. Overview

In this section, I will first define the term CC and then I will discuss features or characteristics of cloud computing. Service models or deployment models will also be discussed here.

2.2. Definition of Cloud Computing

Various definitions have been provided by various researchers or practitioners. Here, I am providing two main definitions which are described as follows.

Lists of Definition	Aspects	Description
1 – Definition	As per NIST	It is a model for enabling on-demand network access to a shared pool of configurable computing resources that may be released or provisioned with less human effort.
2 – Definition	As per Buyya	It is a distributed or parallel system comprising of a collection of virtualized or interconnected computers that are provisioned dynamically as well as presented as one or more unified computing resources based on service-level agreements established via negotiation between the users as well as service providers.

2.3. Characteristics of Cloud Computing

As per NIST, cloud computing (CC) carries the following key characteristics as follows:

a) *UBIQUITOUS NETWORK ACCESS* – With the aid of diverse user platforms, the resources of cloud computing may be accessed. If the manufacturing application is time-sensitive, then latency or network bandwidth can play a significant role in the case of CC.

b) *MEASURED SERVICE* – In the case of an occupant or application, the utilization of the resource is tracked. An account is provided to the resource provider or the user that can check each utilization. For several reasons, such aspects are done that include effective utilization of the resource or monitoring billing.

c) *RAPID ELASTICITY* – Offers resources that may be scaled in or out as per demand. If the requirements get over, then the resource is scaled out but provided whenever the user needs services.

d) *RESOURCE POOLING* – Cloud Computing (CC) utilizes a multi-tenant model, so the computing resources of the provider may be pooled to serve all users. As per user demand, distinct virtual or physical resources may be assigned as well as reassigned dynamically.

e) *ON-DEMAND SELF-SERVICE* – Computing capabilities may be provisioned unilaterally by a consumer – for instance – network storage or server time – as required without needing human intervention with the provider of each service.

2.4. Service Model of Cloud Computing

S. No.	Service Model	Description
	Software as a Service (SaaS)	In this case, software services are provided on-demand to the users. Here, the services need to be well-protected as users utilized software services from distinct providers. For instance – GoogleApp, Salesforce, etc.
	Platform as a Service (PaaS)	It offers a development platform to the users in CC. For instance – Google AppEngine
	Infrastructure as a Service (IaaS)	It offers the following services – for instance – storage, Network technology, servers. OpenNebula is one example of this model.

2.5. Deployment Model of Cloud Computing

S. No.	Deployment Model	Description
	Public cloud	In this case, resources are accessed quickly and need to pay only for operating resources.
	Private cloud	In this case, resources are meant only for particular organizations. Data security is the main benefit of this cloud.
	Hybrid cloud	It utilizes the combined features of the public or private cloud.
	Community cloud	This cloud is shared among several firms as well as resources are used.

REFERENCES:

1. Alvi, F.A., Choudary, B.S., Jaferry, N. and Pathan, E., 2012. A review on cloud computing security issues & challenges. *iaesjournal. com*, *2*.

2. Alvi, F.A., Choudary, B.S., Jaferry, N. and Pathan, E., 2012. A review on cloud computing security issues & challenges. *iaesjournal. com*, *2*.

3. Dillon, T., Wu, C. and Chang, E., 2010, April. Cloud computing: issues and challenges. In *2010 24th IEEE international conference on advanced information networking and applications* (pp. 27-33). Ieee.

4. Shahzad, A. and Hussain, M., 2013. Security issues and challenges of mobile cloud computing. *International Journal of Grid and Distributed Computing*, *6*(6), pp.37-50.