

Cloud computing security: a review

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Abstract

In the current scenario the emerging world demands of cloud computing services is increasing day by day. This increasing demand is due to the on demand service with cost effective approach. The increasing trend as several advantages offered through cloud computing. But the negative side is the security issues. Due to the huge use and data communication through data transfer on demand there is several possibility of security breach. So in this paper the main aim is to discuss and provides the analysis based on the previous method in the direction of data security in the cloud computing environment. This analysis provides the security analysis in terms of public and private clouds.

Keywords

Cloud computing, Security breaches, Public cloud, Private cloud.

1.Introduction

In the current business arena cloud computing is very helpful and cost effective for small business as well as for the larger business [1–5]. In the today's world the use of cloud computing is spreading in different areas. It includes the university, business enterprise, IT industry, Health sector etc. The security concern is the major concern these days. There are several literature which discussed this type of issues like [6–10]. Virtualization, dominating enlisting is additionally the more obvious office parts of passed on preparing. In any case, to satisfy the execution on the parallel framework and keeping up the decency is convincing [11]. In every single one of these works, stunning attempts are made to plan strategies that meet assorted fundamentals: high game plan feasibility, stateless check, unbounded use of request and wretchedness of information, and so forth. Thinking about the piece of the verifier in the model, every last one of the plans showed before fall into two classes: private auditability and open auditability [5]. Despite the manner in which that orchestrates with private auditability can play out the plans enough, yet it is attempting circumstance if the information is anchoring quietly [5].

Virtualization is the key fragments of scattered figuring by which information sharing is conceivable between various machines of virtual closeness from the server develop [12]. Virtualization draws in the live relocation [9] of virtual machines which helps in keeping up the guaranteed SLA to the cloud client other than to change stack crosswise over physical servers in the information centres [12, 13].

In the cloud provider market the main providers are Google, Microsoft, Amazon and Salesforce.com. The appropriated figuring advantage show relies upon the data correspondence layer. The whole correspondence is relies upon three layers. The layers of the cloud computing are: Software as a Service (SaaS) which is for the software based application. Customer relationship organization (CRM) is the example [14]. Platform as a Service (PaaS) is for the platform based application for the different deployment services. Infrastructure as a Service (IaaS) by and large joins virtualization conditions as got associations rather than physical or submitted PC gear.

In the standard method for figuring the advantages are picked up locally which are incidentally higher in expense and not sensible. This compels the courses in which a client could take an interest with the thing in

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that the thing was just open and available for the main workstation [14]. Regardless, presently by the utilization of passed on figuring the Software as a Service show has changed this levelheadedness such that thing can be obtained for use over the Internet [14]. Instead of getting programming in a boxed course of action, the client can buy an association to utilize an application that is energized in the cloud [14, 15]. The standard ideal position of this sort of structure arrives is no need of genuine work station as the client go yet on interest assets/programming can offer it to lease. So on the off chance that it is joined with the security associations it winds up being extraordinary.

The main objectives of this paper are:

1. To perform security analysis in public and private cloud environment.
2. To perform performance based analysis of the previous methods.
3. To perform analytical and comparative study.

2.Literature survey

In 2017, Akhil et al. [16] discussed the data security in the cloud environment as the number of users in the cloud is large. They have focus on the data security aspects when the data is secured. They have suggested that the intruders can act as the third party and can gain the access. So they have suggested encryption technique for the data security. Their results show that the approach can enhance the security system.

In 2018, Alsaidi and Kausar [17] suggested that internet of things (IoT) plays an important role in the human life. They have focused on the security threats in different areas of IoT technology. They have also presented the cloud architecture associated with IoT with different area of application like smart cities, telemedicine and intelligent transportation system.

In 2018, Elliott et al. [18] suggested the use and applicability of different containers and containerizing services. They have presented a novel approach for the container management. It is helpful in the case of private, public, or hybrid clouds. For improving the security aspects they have

In 2018, Elsayed and Zulkernine [19] suggested the linking and innovation through cloud computing with the big data. They have suggested the security threats that can be the risk for the big data are analytic applications that are malicious and vulnerable. They have presented real-time security monitoring as a service (SMaaS). Their focus is the

detection of the security anomalies for the Hadoop clusters. Their focus is to detect the vulnerability which can breach the data integrity and confidentiality. They have also maintained the information flow in terms of log data. They have also evaluated their performances.

In 2018, Feng et al. [20] suggested insurer for the cyber risk insurance. It provides the insurance like any other insurance but it covers the damage of the cyber threats. They have investigated the pricing for the cloud-insurance market. It includes the users, cloud providers, and cloud-insurers.

In 2018, Gordin et al. [21] suggested the use for the companies to take the benefits of Google cloud, Amazon EC2 and Microsoft Azure. They have suggested that in case of public clouds in general providers assure the security. In case of private clouds it is a concern of research as the security may maintain by third party so the vulnerability may arise. They have performed the study for the private cloud solution. They have also experimented and check the hypervisor-based virtual machines isolation.

In 2018, Halgaonkar et al. [22] suggested security issues in case of vehicular adhoc network (VANET). They have discussed VANET in terms of cloud computing. They have discussed the advantages of road side unit (RSU). But they have suggested the cost & security as the main disadvantages. They have provided the direct communication approach for reducing the cost and enhancing the security.

In 2018, Lee et al. [23] suggested the need of network security in case of cloud computing. They have suggested that cloud platform utilizes third-party data centers model like in case of PaaS is Heroku. Heroku supports different programming languages. They have suggested security issues which can be handle by advanced encryption standard (AES). They have implemented AES for data security in Heroku. Their result support the AES standard for the security.

In 2018, Li and An [24] discussed the need of cloud storage and security. They have suggested that the security concern is very important concern now a days in case of cloud computing. They have focused on improvement of policy storage and the improvement of cloud security issues.

In 2018, Nguyen et al. [25] discusses the increasing demand of the campus cloud infrastructures. They

have also focused on dealing with the very strict policy on the security requirements. But they have suggested that campus private clouds (CPC) are not fully secure.

So they have proposed a cost-effective, and moving target defense (MTD) based cloud resource adaptation approach. They have proposed a Bayesian attack graph (BAG). It is proposed as the threat assessment model. They have followed the protocol of common vulnerability scoring system (CVSS). They have evaluated on the city university of New York (CUNY) research network. The examination includes one of kind situations with various privacy, honesty, and accessibility related vulnerabilities being abused by assaults from various system areas. At last, we reproduce a CUNY inquire about system in condition to approve our Sack display by imitating assault situations and watching framework versatility with and without MTD.

In 2018, Paikrao and Patil [26] suggested that the resources sharing and economical computing is the main concern in cloud computing. But due to the resource sharing approach there are several security concerns. They have considered and classify them comprehensively like issues recognized by CSA, issues distinguished because of area of the information, issues acquired from systems administration and all the more significantly the issues brought because of vulnerabilities up in virtualization. Hypervisor vulnerabilities are zone of worry similarly as VM the board is concerned. A security as an administration is proposed for virtualization vulnerabilities.

In 2018, Souaf et al. [27] suggested that there is a race for providing better cloud services by different cloud providers. So the adequate provider selection becomes a challenge now days. They have proposed abrokerage solution for the security properties in case of inter-VM relations. Their method used the finite model finder KodKod for the consistency verification for the deployment model.

3. Analysis

The following analysis has been deduced by the above study:

1. The possible security attacks are denial of service (DoS) attacks, jamming attack, Sybil attack, black hole attack, wormhole attack and malware attacks [17].

2. Most of the study suggested strong encryption and decryption techniques with data management [6, 28].
3. Automatic migration procedure is suggested for the future clouds [18].
4. It is widely used in different areas and the demand is increasing day by day so the security in the data communication in case of data transfer is crucial.
5. Study suggested evaluating and validating security system on different platforms [29].

4. Problem domain

After the study and analysis the following gaps have been identified:

1. Data security is import when the data is transferred in a cloud system.
2. There is a security concern in case of private clouds.
3. The security is needed in such manner that it can protect the data and also capable in handling the detection mechanism.
4. There is the need of strong and combination of encryption and decryption techniques.
5. There is the need of validation and checking of the security system in different deployment applications and platforms.

5. Conclusion and future work

This paper addresses the issue of data security in the cloud computing environment. It is very crucial now a days as the use of cloud computing is increasing day by day. For this we have survey and analysis the approach and the direction is to be provided in the gaps found in the [previous published approaches and discuss the utility along with the main objectives.

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Conflicts of interest

The authors have no conflicts of interest to declare.

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