CLOUD COMPUTING AND POSSIBLE SECURITY SYSTEM: AN ANALYTICAL STUDY

*Pramod Kumar
**Dr. Anu Bharti

Abstract

The users are currently experiencing a switch in the information technology world, from in-house generated computing power into utility-supplied computing called cloud computing. In cloud computing resources are delivered over the Internet as a Web Services. Recently, there has been a dramatic increase in the popularity of cloud computing systems that rent computing resources on-demand, bill on pay-as-you-go basis, and many users on the same physical infrastructure. The cloud computing environment provides an illusion of infinite computing resources to users.

Keywords: Cloud Computing, Security System.

Introduction

The users are currently experiencing a switch in the information technology world, from in-house generated computing power into utility-supplied computing called cloud computing. In cloud computing resources are delivered over the Internet as a Web Services. Recently, there has been a dramatic increase in the popularity of cloud computing systems that rent computing resources on-demand, bill on pay-as-you-go basis, and many users on the same physical infrastructure. The cloud computing environment provides an illusion of infinite computing resources to users. The user can increase or decrease their resource consumption rate according to their demands, like electricity. Users are least bother about how and where it generated from rather just make use of it as per our need. When cloud computing concept extend to information technology, they are neither concerned where the computing services are delivered nor how it function internally. The cloud computing itself it is considered to be fully virtualized system that allow data computation, storage, and software resources together and server as a single platform. It offer computing services in an efficient and transparent manner. The computing technologies such as cluster, grid, and cloud all aim at allowing access to large amount of computing resources from a fully virtualized system, by seamlessly aggregating resources and offering a single system view.

The cloud computing is a new concept for delivering computing service and largely satisfies emerging requirements of the information technology. It has claimed itself to be of great benefit for users and organizations because it can dramatically reduce the expenses and provide an aid to manage information technology systems without any hassle.

Definition of Cloud Computing

The cloud computing is a hot topic nowadays in the technology and business world, also there are multiple definitions to it. The cloud computing is an evolving computing paradigm that can be defined as a virtual infrastructure which provides shared computing resources and service over the internet to the cloud user. The cloud computing, is defined by NIST as "a model for enabling

*Research Scholar, Sunrise University, Alwar, Rajasthan.
**Research Supervisor, Sunrise University, Alwar, Rajasthan.

ubiquitous, convenient, ondemand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction". The cloud computing technology is based upon many existing computing technologies, which includes the availability of high speed broadband networks and internet facility, inexpensive storage, advanced virtualization techniques, distributed computing, development of grid computing, utility computing, service-oriented architecture and multi-tenant architecture.

Review of Literature

Adnaan Arbaaz Ahmed, (2018) Cloud computing is the practice of using a network of remote servers hosted on internet to store, manage and process data on demand and pay as per use. It provides access to a pool of shared resources instead of local servers or personal computers. As it do not acquire the things physically, it saves managing cost and time for organizations. Cloud computing is a completely internet dependent technology where client data is stored and maintain in the data center of a cloud provider like Google, Amazon, Microsoft etc. Cloud computing is an emerging domain and is acclaimed throughout the world. There are some security issues creeping in while using services over the cloud. This research paper presents a review on the cloud computing concepts as well as security issues inherent within the context of cloud computing and cloud infrastructure. This paper also analyzes the key research and challenges that presents in cloud computing and offers best practices to service providers as well as enterprises hoping to leverage cloud service to improve their bottom line in this severe economic climate and boost up its usage. The main emphasis of our study based on existing literature and to understand the concept of multitenancy security issue.

Garima Gupta, (2017) Today, cloud computing is an emerging way of computing in computer science. Cloud computing is a set of resources and services that are offered by the network or internet. Cloud computing extends various computing techniques like grid computing, distributed computing. Today cloud computing is used in both industrial field and academic field. Cloud facilitates its users by providing virtual resources via internet. As the field of cloud computing is spreading the new techniques are developing. This increase in cloud computing environment also increases security challenges for cloud developers. Users of cloud save their data in the cloud hence the lack of security in cloud can lose the user's trust. In this paper we will discuss some of the cloud security

issues in various aspects like multi-tenancy, elasticity, availability etc. the paper also discuss existing security techniques and approaches for a secure cloud. This paper will enable researchers and professionals to know about different security threats and models and tools proposed.

Shubhashis Sengupta , (2015) Cloud Computing is increasingly becoming popular as many enterprise applications and data are moving into cloud platforms. However, a major barrier for cloud adoption is real and perceived lack of security. In this paper, we take a holistic view of cloud computing security - spanning across the possible issues and vulnerabilities connected with virtualization infrastructure, software platform, identity management and access control, data integrity, confidentiality and privacy, physical and process security aspects, and legal compliance in cloud. We present our findings from the points of view of a cloud service provider, cloud consumer, and third-party authorities such as Govt. We also discuss important research directions in cloud security in areas such as Trusted Computing, Information Centric Security and Privacy Preserving Models. Finally, we sketch a set of steps that can be used, at a high level, to assess security preparedness for a business application to be migrated to cloud

Vikrant Kaulgud, (2016) Cloud Computing is increasingly becoming popular as many enterprise applications and data are moving into cloud platforms. However, a major barrier for cloud adoption is real and perceived lack of security. In this paper, we take a holistic view of cloud computing security - spanning across the possible issues and vulnerabilities connected with virtualization infrastructure, software platform, identity management and access control, data integrity, confidentiality and privacy, physical and process security aspects, and legal compliance in cloud. We present our findings from the points of view of a cloud service provider, cloud consumer, and third-party authorities such as Govt. We also discuss important research directions in cloud security in areas such as Trusted Computing, Information Centric Security and Privacy Preserving Models. Finally, we sketch a set of steps that can be used, at a high level, to assess security preparedness for a business application to be migrated to cloud.

Monjur Ahmed, (2014) Cloud computing has formed the conceptual and infrastructural basis for tomorrow's computing. The global computing infrastructure is rapidly moving towards cloud based architecture. While it is important to take advantages of could based computing by means of deploying it in diversified sectors, the security

aspects in a cloud based computing environment remains at the core of interest. Cloud based services and service providers are being evolved which has resulted in a new business trend based on cloud technology. With the introduction of numerous cloud based services and geographically dispersed cloud service providers, sensitive information of different entities are normally stored in remote servers and locations with the possibilities of being exposed to unwanted parties in situations where the cloud servers storing those information are compromised. If security is not robust and consistent, the flexibility and advantages that cloud computing has to offer will have little credibility. This paper presents a review on the cloud computing concepts as well as security issues inherent within the context of cloud computing and cloud infrastructure.

Cloud Computing Security System

The security issues raised by the cloud paradigm are not always dealt with the user's point of view. Information security is a major aspect to be considered in all kinds of information system, wherein security within cloud computing is of generic importance. The cloud computing has emerged to be the next big thing in the modern corporate world. It have a growing impact on enterprise information technology system and business activities in many large and small organizations.

Cloud computing users work with data and applications that are often located offpremise. However, many organizations are uncomfortable with the resource sharing feature of cloud, where data and applications share common computing resource, to which they do not have the complete security control. There is a lack of knowledge as how cloud computing impacts the confidentiality and privacy of data stored, processed and transmitted in cloud computing environments. The most of security solutions are 4 not always tackled security issues from the users' point of view. The following reasonable security concerns of users are not answered by existing security solution provided by the cloud service providers. • How can the user ensure that their data remains confidential in cloud, which is the multi-tenant shared platform? • Is there a way to ensure that the user data dose not gets corrupted? The assurance and addressing of these security issues would enhance the confidence in cloud computing system and therefore attract new customers.

Security Issues in Cloud Computing

Cloud computing consists of applications, platforms and infrastructure segments. Every segment performs different operations and offers different products for businesses and individuals around the world. There are numerous security issues for cloud computing as it encompasses many technologies which includes networks, databases, operating systems, virtualization, resource scheduling, transaction management, concurrency control and memory management. Therefore, security issues for many of these systems and technologies are applicable to cloud computing. Data security involves encrypting the data as well as ensuring that appropriate policies are enforced for data sharing. The given below are the various security concerns in a cloud computing environment.

• Access to Servers & Applications
• Data Transmission
• Virtual Machine Security
• Network Security
• Data Security
• Data Privacy
• Data Integrity
• Data Location
• Data Availability
• Data Segregation
• Security Policy and Compliance

Conclusion

Cloud computing is an immense prospect both for the businesses and the attackers – both parties be able to have their own reward from cloud computing. An infinite possibilities of cloud computing cannot be unseen only for the security issues reason – the unending analysis and research for robust, regular and integrated security models for cloud computing might be the only path of inspiration. Based on this fact that the impact of security issues in cloud computing can be decrease by multi-tenancy architecture.

Cloud computing has enormous prospects, but with equal number of security threats. One of the biggest security worries with the cloud computing model is the multi-tenancy. In this paper, we first discussed various models of cloud computing, security issues and research challenges in cloud computing. Multi-tenancy is major issue for Cloud Computing Security. There are several other security challenges that include security aspects of network and virtualization. The infinite possibilities of cloud computing cannot be unseen only for the security issues - the unending analysis and research for robust, regular and integrated security models for cloud computing might be the only path of inspiration. Based on this fact that the impact of security issues in cloud computing can be decreased by multi-tenancy architecture. Regardless of the nature of security issues, it can be undoubtedly concluded that the deployment of any form of cloud computing should deal with the security concerns corresponding to those of the

safety critical systems. We believe that due to the complexity of the cloud, it will be difficult to achieve end-to-end security. New security techniques need to be developed and older security techniques are needed to be radically tweaked to be able to work with the clouds architecture. We hope our work will provide a better understanding of the design challenges of cloud computing, and pave the path for further research in this area.

References

1. Ahmed, Adnaan Arbaaz, (2018). Cloud Computing: Study of Security Issues and Research Challenges, International Journal of Advanced Research in Computer Engineering & Technology (IJARCET), Volume 7, Issue 4, PP.13-23.
2. Ahmed, Monjur, (2014). Cloud Computing And Security Issues In The Cloud, International Journal of Network Security & Its Applications (IJNSA), Vol.6, No.1, pp.1-12.
3. Gupta, Garima, (2017). A Survey on Cloud Security Issues and Techniques, JISR, vol.123, issue 34, pp.678-689.
4. Kaulgud, Vikrant, (2016). Cloud Computing Security--Trends and Research Directions, journal of cloud computing, vol. 34, issue 32, pp.67-78.
5. Sengupta, Shubhashis, (2015). Cloud Computing Security--Trends and Research Directions, JISR, vol. 23, issue 3, pp.89-93.