

Key Concepts of Cloud Computing

Charnpreet Kaur, Assistant Professor, Department of Computer Science and Engineering, Chandigarh University, Mohali

Harpreet Kaur, Department of Computer Science and Engineering, Chandigarh University, Mohali

Article Info

Volume 82

Page Number: 15887 - 15890

Publication Issue:

January-February 2020

Abstract:

Cloud computing is wide growing area which provide several services to its clients. The infrastructure of cloud computing is very necessary part because the whole functioning of cloud computing is based on the resources like network, platform with the scalability and the availability of the resources, which are useful to satisfy the customer needs up to the satisfaction level. This work firstly explains the key challenges for cloud computing in ICT environment. Secondly, what are the components of cloud computing infrastructure and eventually the various services provided and what are the benefits of these services to the clients are also discussed. The main focus of this work is to give the simple overview of the cloud computing challenges with the infrastructure management and the key benefits that are provided to solve these problems. The whole working from service providing to data storage is very challenging task that faces many challenges like cost, time, workforce, resources and scalability. Here in this work discussed about the infrastructure, challenges, and various services. Thirdly what are the basic requirements for the cloud infrastructure in particular organization. Fourthly the security issues and cloud solutions provided by datacom organization

Keywords: Servicesss

Article History

Article Received: 18 May 2019

Revised: 14 July 2019

Accepted: 22 December 2019

Publication: 28 February 2020

INTRODUCTION

The increased amount of data and the degree of connectivity had led the providers to build larger and reliable infrastructure that can handle the dynamic load by the efficient use of resources. The infrastructure as a service (IaaS) mainly refers resource clouds that provide the managed and scalable resources to the clients as a service. The organizations which are dealing with IaaS provide the different resources to the clients via service interface like storage of cloud data deals with providing the reliable access of varying length, security and quality of data. The Infrastructure as a service provide the access to various resources like CPU that is typically a virtual environment.

The Key ICT environmental challenges for Cloud Computing

The ICT (information and communication technology) is the term that deals with the

information and communication technology or the processing of applications like network hardware and software. The ICT environment mainly deals with the environment conditions that support the decision making on environmental issues. The environmental concerns motivate to development of smart networks for constructing the resource efficient infrastructure.

The organizations that deals with various cloud services like **Infrastructure as a Service (IaaS)**, **Desktop as a Service (DaaS)** and **OPaaS** and gives different benefits to its customers. The organizations provide the sensible, beneficial and reliable services to the Government. Organizations helps to decrease the expenditure, provide the cloud commercial model and provide the each organization to dedicate facilities.

Basic requirement for the Cloud infrastructure

There are many considerations for cloud computing infrastructure there are public and private cloud that offers the different benefits. IT organizations can choose to utilize the applications on different types of cloud. The public clouds are on the internet and private are typically provided to the particular client. The organizations provide the various clouds like private, shared private cloud, Public and hybrid cloud.

Components of Cloud computing infrastructure

Infrastructure as a service (IaaS): IaaS consist of physical or virtual machines and clusters. Cloud infrastructures can be PCs, workstations, heterogeneous and integrated clusters. The infrastructure also covers the storage services and database management services. The infrastructure generally managed by higher management layer that provide the customized runtime environment, quality of service. The virtualization tools manage the resource pool and partition the virtual machines and physical infrastructure. IaaS includes the shifting an organization data into externally based data bases. organizations provides range of services of IaaS in information and communication technology (ICT) environment and also host and manage the infrastructure solutions as required by the different government organizations. organizations provide the data center services like two-tier and three-tier, Performance compute: that compute the resources required to meet organization's needs, Dev Cloud: Dev Cloud is used to test the applications with low cost, Storage and back-up service: multi-tier range of storage services and back-up using advanced duplication.(Heilig, 2014)

IaaS provides the following benefits:

- **Reduced cost:** IaaS gives effective services in less cost to the firms as compared to using own manforce, resources, Constructing and running own infrastructure (Hardware, Software).

- **Business Cleverness:** IaaS provide the flexibility to the firms that they can increase and decrease the infrastructure requirements to meet the demands instead of giving fixed resources.
- **Reliability and execution:** to compute the best product of its type, storage design and the network designed to deliver various services like availability and reliability.

Desktop as a Service (DaaS): provides the desktop service to virtual and traditional desktop. Organizations provides the secure desktop as a service in information and communication technology framework, it also helps to reduce cost, provide security and improves the quality desktop service.

Advantages

Desktop as a Service is intended to give the accompanying advantages:

- **Increased workforce efficiency:** Different applications and desktop virtualization support for anyplace, at any time to improve work results
- **Reduce cost and time:** DaaS helps to reduce the time spent on applications and working with problems and also taking care of desktop support services
- **Reduced risk:** DaaS improve the security and reduce the risk of data loss.

Security issues

The first and most important concern is security. The private cloud are not more secure as compared with public cloud. The security term is big issues for the organizations. Mainly the cloud provider set the rules and regulations for the cloud users like there is system of segmentation of data that indicate who has access to which information. The security issues is handed by the security team of cloud provider. Each cloud provider has security department. The Employees of security department looks the issues regarding safety of data, that how they make sure,

the data of organization is totally secure. These things create impact on the image of cloud provider organization.

Private cloud: Private clouds are constructed for the full use of one client it provides the security, quality of service and proper control over data. The organization that owns the private cloud has full control on the applications. Organizations private cloud gives the capability and the scalability in cloud solution and gives the full control on how and where the solution is employed. They provide the private cloud architecture solution that provides the varying solution to the customers to fulfill their needs. They provide the scalable, secure and mature platform which not required manage and run.

Public Cloud: Public clouds are the clouds run by third party and the applications of different clients are mixed together on the server, networks and storage system. Public clouds are provided away from the client's site and they give the method to reduce the cost and risk by providing a flexible and temporary extension to organization infrastructure

Hybrid Cloud: Hybrid clouds are the combination of both the private and public cloud models. The hybrid cloud provides the on-demand, externally provided scale. Hybrid cloud provide the chance to increase a private cloud with the other resource like public cloud can be used to maintain the level of service in vary workload fluctuations. Hybrid cloud generates the complexity of distributing the applications in private and public cloud. Organizations provide the hybrid cloud, that provide the iaas platform with the capability of moving the workload on to their platform. Organizations cloud services support the VMware vcloud and Microsoft Hyper-V replica, so Datacom use virtualization technologies. (Hofmann & Woods, 2010)

The main thing is that there is lack of trust between the organizations regarding the security of data, But the best policy that is set by cloud provider organization is that for security reasons the few

people have authority to retrieve sensitive data that is good. This means the organization network and security staff is better trained for protecting the hosted and metal virtualization. The features like lock the console, manage the installation of software and the robust monitoring. The main challenge is that whether the organization has good security departments not enough so far to explain the policies of cloud security. (Mather, Kumaraswamy & Latif, 2009)

Issues of Cloud Security

Regulatory Concerns

The organization like Datacom has big data storage and financial operations and need wide range of regulatory requirements. The datacom organization is multi-national nature organization and facing big challenges of managing regulatory and legal requirement. The further thing is that the organization has to follow the set of instructions provided by the government. Before the implementation of private cloud, it is necessary that regulatory needs should be deliver and proper plan is construct that how to make the cloud infrastructure according to these terms. (Mather, Kumaraswamy & Latif, 2009)

Legal Agreements

The legal agreement is another important issue for cloud security. This agreement is very much similar with the terms of agreement between the public cloud vendors and organization. And there is also an internally agreements set up between the IT departments and business units. These things exists in the cloud, and also some times in the hard drive space, other related resources and bandwidth. To provide a level of service needs a certain types of service level agreement (SLA), these types of things ensure a service delivery are developed and approved by all other involved parties. (Mather, Kumaraswamy & Latif, 2009)

Service level Agreement (SLA)

The service level agreement is simply the outlines of risks and security. There is also an Operating Level Agreement or OLA, it is the part of service level agreement which helps the relationships between groups and parties. This is like a useful record document. And there is some other documents like User License agreements (ULA). These documents play a vital role in cloud security. The user license agreement offers the guidelines of penalties if all the terms are not right. The size of organization and their requirements are the factors that which agreements should be signed. (Mather, Kumaraswamy & Latif, 2009)

Application Suitability

The application suitability is like type of planning that is done, before even to security. The Organizations have different unit of applications, some are well fit to the environment of cloud than the others. The unit of applications that match the requirement more closely are selected by the organization. The package of application should to run in a virtualized environment. (Mather, Kumaraswamy & Latif, 2009)

Network and Application Performance

The application performance is depending on where the data is kept, on a virtualized server. Generally the end user will examine the different application achievements levels. Before selecting the private cloud, an organization must decide the best place for storing the data. (Mather, Kumaraswamy & Latif, 2009)

Conclusion: Cloud computing in ICT environment mainly deals with the environment conditions that support the decision making on environmental issues and motivate to development of smart networks for constructing the resource efficient infrastructure. In the modern time cloud computing clients' faces number of challenges like scalability, cost issues, energy and mobility constraints. Organizations provide the different types of cloud for the different

clients like public cloud, private cloud and hybrid cloud. Organizations offers different components of cloud computing like Infrastructure as a service, Desktop as a service and Platform as a service to the various clients. Organizations provides various services parallel automated manages service, multi cloud service to facilitate the customers.

References

1. Cloud Computing: (2015). International Journal of Cloud Applications and Computing, 5(2), 0-0. doi:10.4018/ijcac.2015040104
2. Hofmann, P., & Woods, D. (2010). Cloud Computing: The Limits of Public Clouds for Business Applications. *IEEE Internet Compute.* 14(6), 90-93. doi:10.1109/mic.2010.136
3. Wu, J., Shen, Q., Zhang, J., & Xie, Q. (2011). Cloud Computing: Cloud Security to Trusted Cloud. *AMR*, 186, 596-600. doi:10.4028/www.scientific.net/amr.186.596
4. Heilig, L. (2014). A View on Cloud Computing from above the Clouds. *Computer*, 47(10), 8-8. doi:10.1109/mc.2014.271
5. Mather, T., Kumaraswamy, S., & Latif, S. (2009). *Cloud security and privacy*. Beijing: O'Reilly.
6. Rajan, R. (2012). Evolution of Cloud Storage as Cloud Computing Infrastructure Service. *IOSRJCE*, 1(1), 38-45. doi:10.9790/0661-0113845
7. Endo, P., Gonçalves, G., Kelner, J., & Sadok, D. (2011). A Survey on Open-source Cloud Computing Solutions. *VIII Workshop Em Clouds*.
8. Strategy Study on Infrastructure Construction with Cloud Computing for Enterprises. (2013). *IJACT*, 5(3), 282-289. doi:10.4156/ijact.vol5.issue3.33
9. Buyya, R. (2013). Introduction to the IEEE Transactions on Cloud Computing. *IEEE Transactions On Cloud Computing*, 1(1), 3-21. doi:10.1109/tcc.2013.13