iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 9 **Issue:** X **Month of publication:** October 2021

DOI: https://doi.org/10.22214/ijraset.2021.38375

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 9 Issue X Oct 2021- Available at www.ijraset.com

A Survey of The Various Techniques for Virtualization in Cloud Computing

Er. Mandeep Kaur[1], Er. Jasdeep Kaur[2]
[1]*P.G. Student, I.K.G Punjab Technical University, Kapurthala*
[2]*Assistant Professor, Department of Computer Science, K.C College of Engineering and IT, Nawanshahr (INDIA)*

Abstract: Cloud computing is used to describe the delivery of software, infrastructure and storage devices over the internet. After evolution of the internet, Cloud computing is the next stage. Cloud Computing can simply the way in which the business operates, particularly in terms of needs of hardware. One is able to access and connect the same information but it can be done from anywhere and a more streamed technology installation is enjoyed by organization. VCloud Computing involves the concepts of parallel processing and distributed computing in order to provide the shared resources by means of Virtual Machines(VMs) hosted by physical servers. It is a service oriented design that reduces the cost of access to gather the information of the clients offer greater flexibility and demand based services. The benefits of Cloud Computing are far reaching. It is not a technology solution or server stored in another location but it is business enhanced computing that affects the business positively. Apart of its popularity it has some concerns which are becoming huddles for its wider adoption. A survey of cloud computing and virtual migration is presented in this paper.

Keywords: Cloud Computing, Virtualization, SaaS, PaaS, IaaS

I. INTRODUCTIOZ

Cloud computing has storage and computing as a service that can be provided to customers according to pay-as-you-go model. Cloud computing gives the ability for supporting today's technology trends, such as large data and analytics for social and mobile networks [1]. As per NIST, cloud computing is considered as a model that allows ubiquitous, easy and on-demand network access for sharing computing resource pools (such as servers, networks, applications, storage, and services) that may instantly allocate and publish or serve with less management effort supplier interaction [2].

Cloud computing is the term utilized to allude to web-based applications and web administrations like disseminated processing, virtualization of machines, secure web administrations. The difficulties vary from managing resource variety, designating resources to the user demands efficiently as well as effectively scheduling the requests that are planned to assigned resources, as well as managing contingencies linked with the workload and the system.

Cloud Computing can simplify the way in which your business operates, particularly in terms of need of hardware. By means of cloud computing solution , you are able to connect and access the same information but connection can be done from anywhere and a more streamed technology installation is enjoyed by the organization. The various cloud computing services that are provided are shown in the Fig. 1. For SaaS, the cloud vendor will host the software for you and you are not required to install and manage the software or buy the hardware for it. Software as a Service (SaaS) is where journey of the most of the businesses start: typically starting with email remote delivery and backup of business information in online mode. PaaS i.e Platform as a Service is where the operating system is hosted in the Cloud rather than installing it on the physical machine. IaaS i.e Infrastructure as a Service is a service where physical server space is rented and kept at warehouse of the vendor. Any legal software can be installed on the server and access to the staff and the clients can be provided as deemed fit by the organization.

Cloud implementation offers many advantages as compared to the Traditional IT installation . In Cloud Computing , all the hardware, software and infrastructure are owned and managed by the cloud provider and the business are supposed to pay only monthly fees for the services provided by the cloud vendor. The comparison between Technology installation before and after the cloud implementation is shown in Fig. 2.

There are many reasons for the Organization to go for cloud computing. Firstly it gives the employees the freedom to work from anywhere. Secondly employees can access the data anytime without the constraint of risks associated with the physical storage as the responsibility is taken up by the Cloud Vendor. Complex disaster recovery planning is avoided as this responsibility lies with the cloud vendor [3]. It also enables the organizations to compete with the rest of the organizations as they access the same technology as their other competitors are accessing. Lastly Document control is improved as everyone can work with all files located at the central location.

©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 9 Issue X Oct 2021- Available at www.ijraset.com

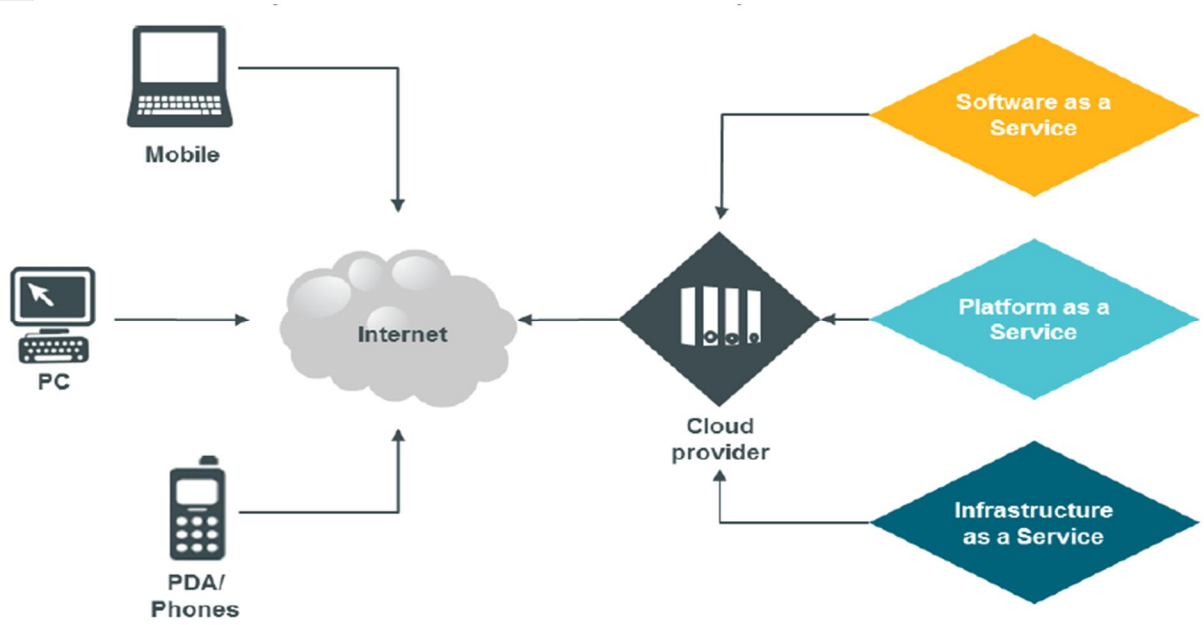


Fig. 1 Cloud Computing services delivered over the cloud

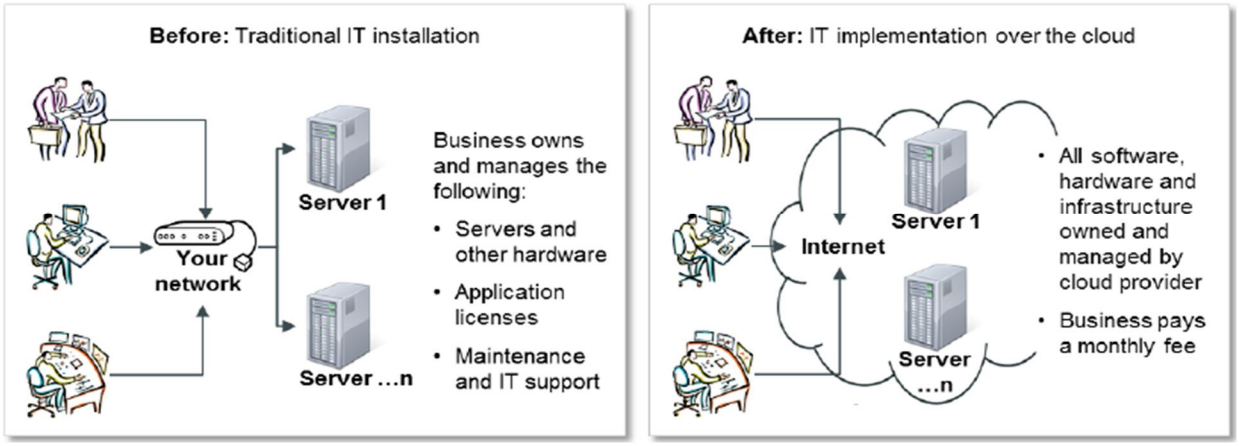


Fig. 2 Technology installation before and after Cloud Implementation

II. CLOUD COMPUTING SERVICE MODELS

Resource virtualization is the foundation for cloud computing. Virtualization provides isolated, transparent, encapsulated, and manageable environment for both cloud service providers and end users. By following an elastic resource pool, virtualization allows cloud service providers and users to make use of the computing/storage resources more capably, such as load balancing, energy saving, host failure handling, and users' resource reassignment. In these basic functional modules, we often need to live migrate a virtual machine (VM) from one host to another without interrupting the current running applications in the VM. In order to provide services, large-scale data centres are established. These data centre contain numbers of running computational nodes given that virtualization by introducing many virtual machines (VMs) on each node[4]. Cloud Computing services may be delivered over the models namely, Public Cloud, Private Cloud, Hybrid Cloud and Community cloud. In Private Cloud, services are owned on site by you and your company , with your data behind your organizations own firewall. In Public cloud, the services may be shared with other organizations and the data security is provided by the cloud service vendor. Services for a single organization delivered over a combination of Public and Private cloud is called Hybrid Cloud. When the Private or Public cloud data is shared by more than one organization , with the data secured and portioned by the cloud service provider is called Community cloud.

©IJRASET: All Rights are Reserved

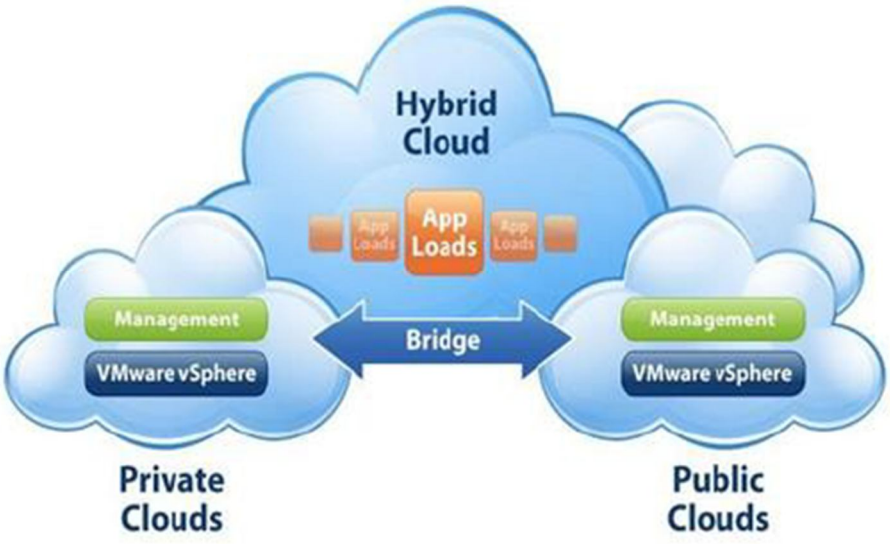


Fig. 3 Cloud Computing Service Models

III. VIRTULIZATION IN CLOUD COMPUTTING

Virtualization in computing is creation of virtual (not real) of virtual something such as hardware, software, platform or a operating system or a storage or a network device [5]. In a virtualized environment IT enterprise has to manage many changes as the changes occur more quickly in virtual environment than in a physical environment. Because of virtualization clouds are scalable and agile. Virtualization technology makes cloud computing environment easily to manage the resources. It abstracts and isolates the underlying hardware, and networking resources in a single hosting environment. It increases the security of cloud computing by protecting both the integrity on guest virtual machine and cloud components virtualized machines can be scaled up or down on demand and can provide reliability. It provides resource sharing, high utilization of pooled resources, rapid provisioning and workload isolation.

The recent trends in virtualization are consolidation of data centers thus reducing the managing cost. Apart of its benefits it has some drawbacks like managing virtual resources is critical and migrating services of these resources are difficult in achieving high availability.

Hypervisor: A hypervisor is software, hardware or a firmware that provides virtual partitioning capabilities which runs directly on hardware. It is defined as the virtual machine manager which allows multiple operating systems to run on a system at a time providing resources to each OS without any interaction.

Hypervisor controls all the guest systems. As the operating system number increases managing is difficult these leads to security issues. If a hacker gets control over the hypervisor he can control the guest systems by knowing the behavior of the system which causes data processing damage. Advanced protection system is to be developed to monitor the activities of the guest Virtual machine [6].

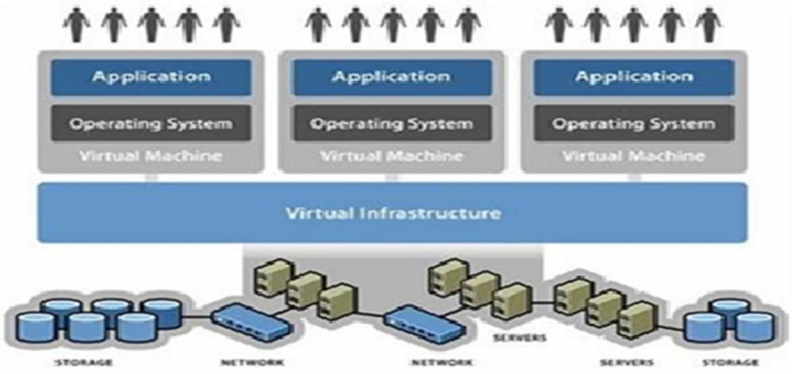


Fig. 4 Virtualization Mechanism

©IJRASET: All Rights are Reserved

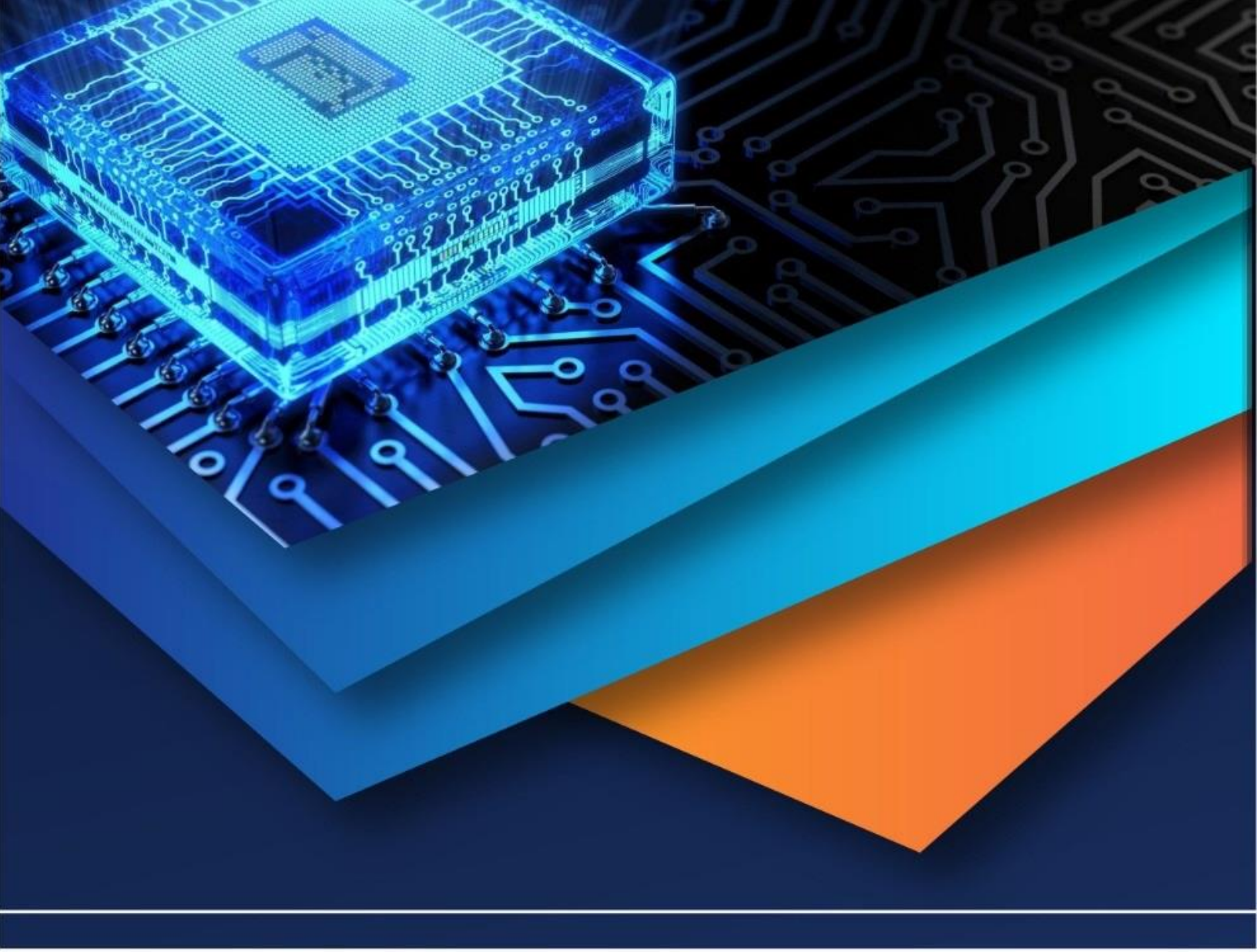
IV. CONCLUSION

To have physical and virtual controls in the cloud environment one must protect data by implementing strong encrypting techniques using secure connections and applying data loss prevention policies [7]. Access control policies are to be established and client identities are to be checked. Data center platforms, infrastructure and client devices are to be secured by trusted computer policies. Enable secure migration from private cloud environment to public cloud providers. This paper discuss complete fast growing technology known as cloud computing. Cloud computing have large number of resources to distributes their resources on demand. Cloud computing provide all the computing related services through the internet. For storage there is data as a service, for application there is software as a service, for computing there is platform as a service and infrastructure as a service etc. However cloud computing have various advantages but there is also some of the critical issues which needs to resolve with urgency. One of the major issues of cloud computing is virtual machine migration from current host system to another system due to over loading or other resource utilization factor.

REFERENCES

[1] T. Treutner, and H. Hlavacs, “Service Level Management for Iterative Pre-Copy Live Migration”, Proceedings of IEEE 8th International Conference on Network and Service Management, Las Vegas, USA, pp. 252-256, 2012.
[2] Huaming Wu, "Multi-Objective Decision-Making for Mobile Cloud Offloading: A Survey", Access IEEE, vol. 6, pp. 3962-3976, 2018.
[3] Ming Li, Saijun Shao, G.Q. Huang, Gangyan Xu, "Cloud gateway operation system for E-commerce consolidation", Automation Science and Engineering (CASE) 2017 13th IEEE Conference on, pp. 395-400, 2017.
[4] Ragib Hasan, Rasib Khan, "A Cloud You Can Wear: Towards a Mobile and Wearable Personal Cloud", Computer Software and Applications Conference (COMPSAC) 2016 IEEE 40th Annual, vol. 1, pp. 823-828, 2016.
[5] P. Venkata Krishna, Sudip Misra, V. Saritha, Dasari Naga Raju, Mohammad S. Obaidat, "An efficient learning automata based task offloading in mobile cloud computing environments", Communications (ICC) 2017 IEEE International Conference on, pp. 1-6, 2017.
[6] Dipika S. Diwase, Chandrashekhar M. Mankar, "Providing data reliability using graph-based application partitioning algorithm in mobile cloud applications", Innovations in Information Embedded and Communication Systems (ICIIECS) 2017 International Conference on, pp. 1-6, 2017.
[7] H. Jin et al., “MECOM: Live migration of virtual machines by adaptively compressing memory pages,” Future Gener. Comput. Syst., vol. 38, pp. 23–35, Sep. 2014.
[8] Antonenko V, Smeliansky R, Ermilov A, Plakunov A, Pinaeva N, Romanov A, “ General purpose cloud platform with NFV life-cycle management.” Proc. 9th IEEE international conference on cloud computing technology and science , pp. 353-356, 2017.
[9] Artac M, Borovsak T, Nitto ED, Guerriero M, Perez-Palacin D, Tamburri D.A. , “Infrastructure-as-code for data-intensive architectures: a model-driven development approach.”, Proc. IEEE 15th International Conference on software architecture, pp 156–165, 2018.
[10] Bellendorf J, Mann ZÁ , “Cloud topology and orchestration using TOSCA: a systematic literature review.”, Proc. European conference on service-oriented and cloud computing, pp 207–215, 2018.
[11] Brogi A, Di Tommaso A, Soldani J. “ Validating TOSCA application topologies”, Proc. International Conference on model-driven Engineering and Software Development, pp 667–678, 2017.

©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)