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A Proficient process on Multi-Cloud Environment Challenges and Security

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Abstract: Multi-cloud is the **next big thing** *in the world of cloud computing. Multi-cloud is the use of multiple cloud computing services in a solitary diverse architecture. Enterprises scheduling on transitioning to a multi-cloud environment need to be upbeat in understanding and addressing its challenges. Cloud management platform (CMP) gives the benefits of a multi-cloud strategy. Security in single cloud is less popular than in multi-cloud due to its ability to reduce security risks. Managing the data security in Multi-Cloud environment pays good attention in Enterprise Cloud strategy. Advanced Encryption Standard (AES) encryption algorithm is defined mainly in data security. A multi-cloud strategy can help you unleash the full potential of the cloud.*

Keywords: Multi-Cloud, Cloud management platform, Enterprise Cloud strategy, Advanced Encryption Standard

I. INTRODUCTION

Cloud services can be intimidating to set up and uphold with multi-cloud services can be even more threatening. Providing security in cloud computing is major issue. There are more security risks in single cloud as it is more prone to attacks. We described a new concept of multi-cloud to solve security problems. Multi-cloud is also called as inter clouds. Data can be stored in multiple numbers of clouds. Security regarding with data storage in multi-cloud is more popular than in single cloud due to its less risks of attacks. Despite that, there is remuneration to using a multi-cloud strategy, whatever the approach within it might be. Disaster recovery becomes easier if important or insightful data is kept redundantly across multiple servers. A multi-cloud strategy also means that as you need more resources during especially busy times, ability to scale and offload any processing. Alternatively, you can route requests to different cloud servers which are optimized for specific tasks. Cloud Computing has several challenges that tends to be in peak in recent years such as Lack of resource, Security, Managing Cloud Spend, Compliance, Governance/ Control, Managing multi cloud services, Building a private cloud and Performance.

II. IMPORTANCE OF MULTI CLOUD MANAGEMENT

Cloud services can be intimidating to set up and engaging with multi-cloud services can be even more intimidating. Even so, there are benefits to using a multi-cloud strategy, whatever your approach within it might be. Disaster recovery becomes easier if your important or susceptible data is kept redundantly across multiple servers. Public cloud services are cheap and accessible, allowing you to pay only for what you need as you use it.

However, you get what you pay for, as it is a shared resource. A private cloud is specifically assigned to one client, allowing them access to its full resources. A hybrid cloud combines these approaches, which allows for instance using public cloud resources when your private cloud is hitting its max load.

A multi-cloud strategy can be comprised of any or all of these approaches. A multi-cloud strategy also means that as you need more resources especially during busy times, you have the ability to scale and offload any processing necessary quickly. Alternatively, you can route requests to different cloud servers which are optimized for specific tasks.

A good cloud management platform (CMP) can give the benefits of a multi-cloud strategy while taking the challenges off your shoulders.
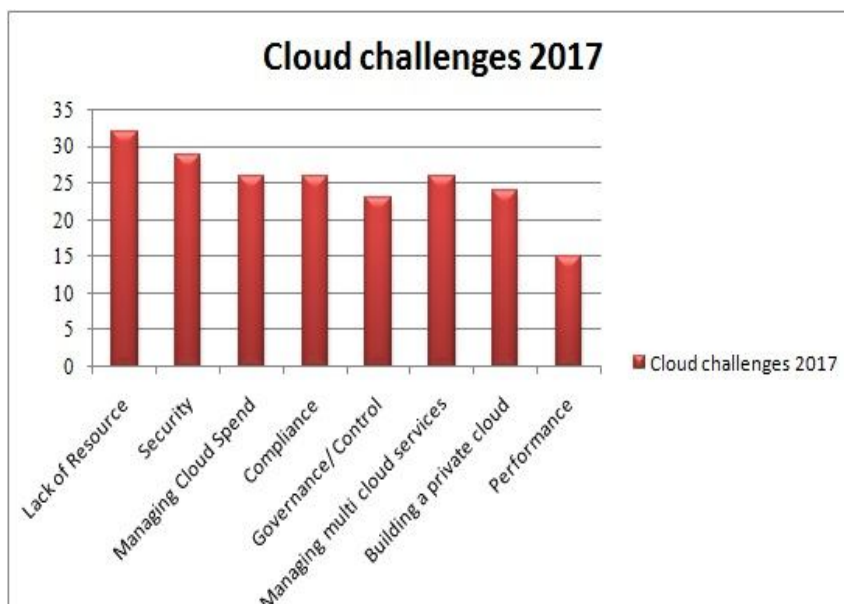
Fig1. Cloud challenges in 2017

III.   HARDWARE AND SOFTWARE BORDERLINE

Cloud computing uses a network of online remote servers to store, manage, and process data. The software of these clouds allows for the duplication and portability of hardware resources like memory and processing power. This means that hardware resources are turning into a virtual hardware with access to virtual memory, virtual processing, and virtual disk. With cloud computing, the hardware assumes the flexibility of software and thus the memory can be multiplied and moved from one server to the other at any time. It is easier to modify hardware resources as they can be adjusted without disruptions by a technician. Remote accessibility is the key to using cloud computing services. These services can be private, public or even hybrid. Cloud infrastructure is present in all the three models that allow the organizations to work remotely by accessing the web from anywhere. In a private cloud, the organization owns the cloud infrastructure components and places them within its own data centre. In a public cloud, these are owned by a third-party public cloud provider. Platform as a service (PaaS) allows the users to develop and manage their own software and applications without having to build or maintain the infrastructure required to develop and launch the said software. Software as a service (SaaS) uses a network of remote servers hosted on the Internet to store and process the data. These cloud hosting providers deliver software solutions to their users through their own servers thereby eliminating the need to install and run the applications for the client. Infrastructure as a service (Iaas) delivers data management infrastructure to the clients. It mostly includes some form of virtualized infrastructure and services that allow the client to deploy virtual machines as components that are managed through a console. The physical resources like the servers, storage, and network are maintained by the host of cloud computing services, whereas the infrastructure deployed is that of the user.

IV.   CHALLENGES FACING MULTI-CLOUD ENVIRONMENTS:

A multi-cloud management platform brings inimitable resources under a single umbrella, and helps avoid troubles with platform and process sprawl. Speaking of sprawl, multi-cloud environments make it easier than ever to lose track of which applications are in succession, where and how much this costs you day to day. The accurate multi-cloud management resolution can help to prepare automatic deployment of existing standards and policies across the new cloud network, rather than forcing you to complete this task one deployment at a time. Multiple compliance necessities apply to some or all of their data and these requirements don't disappear in the cloud. As a result, ensure that specific providers are able to meet compliance needs before making them part of your multi-cloud infrastructure. Multi-cloud offers businesses the ability to create powerful and secure cloud environments outside the traditional compute framework. Maximizing the impact of multi-cloud tends in tackling the challenges of unique portals, app sprawl, migration, compliance and security confrontational.

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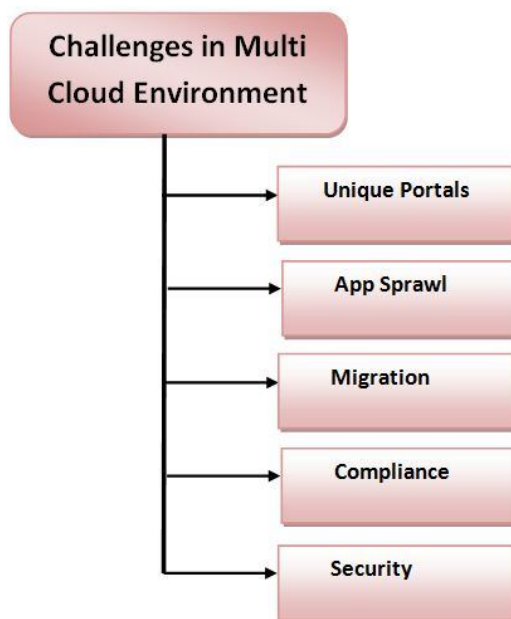*Volume 6 Issue II, February 2018- Available at www.ijraset.com*

Fig2. Challenges in Multi-Cloud Environment

V. MANAGING DATA SECURITY IN A MULTI-CLOUD ENVIRONMENT

The cloud is gradually becoming an intention for sensitive data that should and must be confined. When moving workloads to the cloud, enterprise organizations must consider the security of their data in much the same way as they have always done in conventional compute environments. Cloud services providers (CSPs) all broadcast protection offerings as part of their services. Most reported problems in cloud environments, however will stem from more complex areas for security, specific to each customer, such as a compromised credential insider threats or misconfiguration at the enterprise level, rather than with the CSP. Finally 80 percent of IT organizations are currently deploying, or are planning to implement, multi-cloud environments.

At the origin of trust in an organization's entire system, the security of any cloud service depends on the level of security given to the cryptographic keys used to protect sensitive data. If these keys are lost, the organization's data is lost along with them. If the keys are stolen, the organization's secrets might not remain secret for long, and if the keys are compromised then assumptions around access control may no longer apply. Organizations in commission in a multi-cloud environment will derive the most benefit from a consistent, integrated solution that will offer comprehensive data security along with the ability to effectively manage encryption keys across a range of diverse environments.

Enterprise Cloud deals with Single Private, Single Public and Multi cloud. Where the Multi cloud applies to 80% in which it incorporated with Multi Public, Multi Private and Hybrid Cloud.
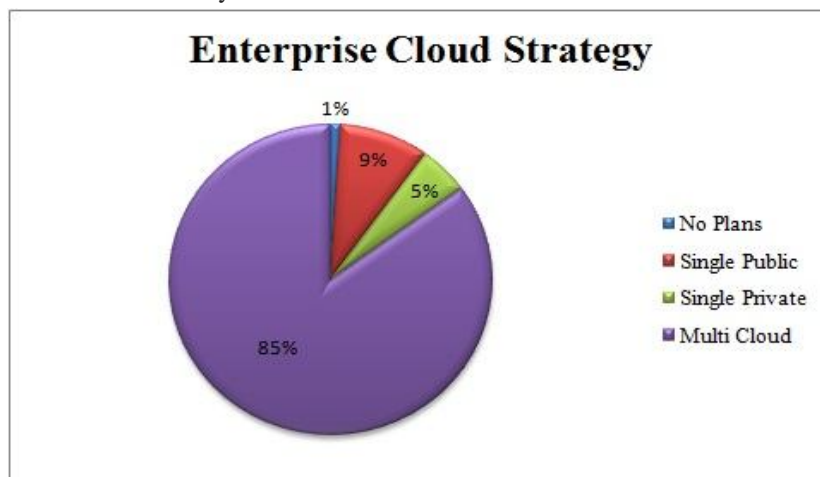

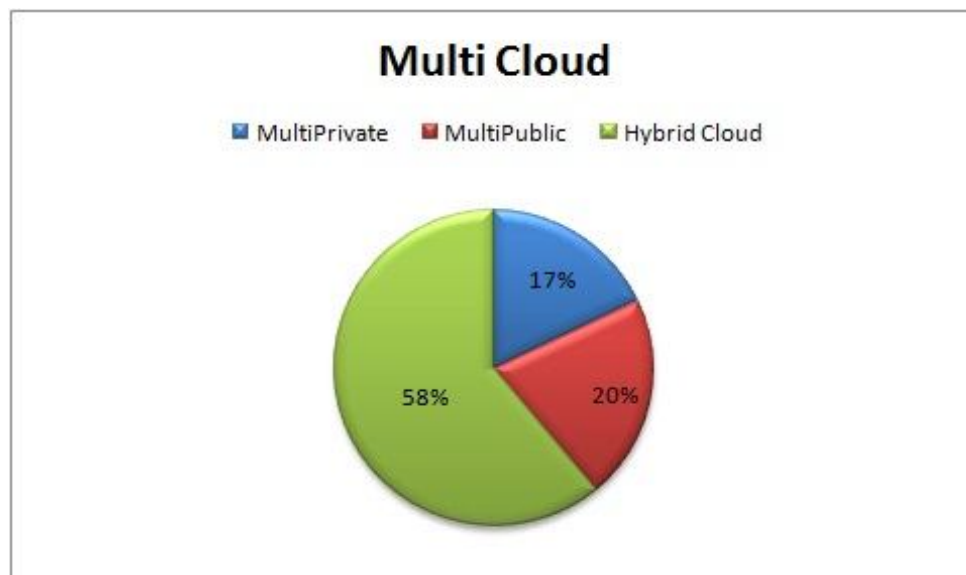Fig3. Enterprise Cloud Strategy

Fig4. Enterprise Cloud strategy in Multi-Cloud

VI.   ADVANTAGES OF MULTI-CLOUD ENVIRONMENT

A.   Multi-Cloud equals Hybrid Cloud
B.   Multi-Cloud is more Secure than Single or on-Prem
C.   Multi-Cloud management is best with open source
D.   Multi-Cloud is specially suited for Established Enterprises
E.   Lower risk of DDoS attacks
F.   Avoiding vendor lock-in
G.   Customization with Cloud-specific Powers

VII.   CONCLUSION

Multi-cloud approaches are taking a superior carve up of the market. More than 85% of enterprise IT organizations will consign to multi-cloud architectures by 2018. In exacting it delivers an open source incorporated development environment for the high level design, cloud service selection, early prototyping, QoS assessments, semi-automatic code generation and automatic deployment of multi-cloud applications. A multi-cloud strategy can help you unleash the full potential of the cloud, providing freedom of choice within a range of constantly developing cloud solutions, with

ut limiting your company to a single vendor.

VIII.   ACKNOWLEDGMENT

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