Machine images and application marketplace- Cloud PaaS and SaaS for enterprise

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ABSTRACT

Although cloud computing is in all mouth today it seems that there exists only a little evidence in the literature that it is more economically effective than classical data center approaches. Cloud computing is revolutionizing however information technology resources and services area unit used and managed whereas the revolution comes with new security issues. Among these is that the drawback of firmly managing the virtual-machine images that encapsulate every application of the cloud. This paper explains how the Machine Images and Application Marketplace are the new revolution in providing Cloud PaaS and SaaS for an Enterprise. In this paper, we will be discussing different cloud services, Machine Images and Application marketplaces which uses multiple and different API's to provide services to the Enterprise. We will talk about multiple Marketplace service providers like Kong, AWS, Microsoft Azure, etc. This paper is done by taking and analyzing a survey held through Google forms which targeted working professionals from the IT industry who may or may not be using Cloud services for their organization. A total of 56 responses were analyzed and formulated for this research paper.

Keywords—Marketplace, SaaS, PaaS, Private cloud, Enterprise cloud, Cloud, Cloud computing, Virtualization, AWS, Kong, Microsoft Azure, DevOps, Machine images

1. INTRODUCTION

You can't browse a technology journal or diary - or perhaps our native newspaper - while not connection relevancy with cloud computing. While there's been heaps of dialogue regarding what cloud computing is and wherever it's headed, nobody has doubts that it's real.

In fact, we expect that cloud computing, in all of its forms, is transforming the computing landscape. It will amendment the approach we have a tendency to deploy technology and the way we expect regarding the political economy of computing.

We hope this paper provides a perspective on cloud computing and starts your journey of exploration in Cloud Computing Machine Images and Application Marketplace.

In a dynamic economic setting, your company's survival could rely upon your ability to specialize in core business and adapt quickly. A company's profitability model cannot be counted on to translate into future growth and profits.

As your business adapts to dynamic government and trade laws, evaluates new business partnerships, and anticipates competitive threats, IT must facilitate the business to realize new ways in which to retort.

At the identical time, plans for modification should usually be created within the context of restricted resources for finances, people, technology, and power.
We introduce you to cloud computing — what it is and how it helps companies rethink how they deploy the technology.

While their area unit heaps of technical concerns, confine mind the basic truth: Cloud computing may be a business and economic model.

Is cloud computing a replacement for the traditional data center? The answer is complicated. In some cases, yes; in some cases, no.

Cloud computing is over a service sitting in some remote information center. It's a collection of approaches which will facilitate organizations quickly, effectively add and subtract resources in almost real time. Unlike alternative approaches, the cloud is as much about the business model as it is about technology. Companies clearly perceive that technology is at the center of however they operate their businesses. Business executives have long been pissed off with the complexities of obtaining their computing desires met quickly and value effectively. In a sense, cloud computing has begun to become thought as a result of these business executives have forced the problem into the forefront. [3]

Cloud computing isn't a quick fix. It needs heaps of thought: that approach is most acceptable for your company?

For example, firms ought to decide if they require to use public (external) cloud services or if they require to possess personal clouds behind their firewalls. How must you designer your internal atmosphere to support the cloud?

The cloud atmosphere itself needs a robust foundation of best practices in code development, code design, and repair management foundations. This sturdy foundation is very vital as a result of most organizations mix public and personal cloud services. You want to be told before you begin your search. A marketplace could be a curated digital catalog that creates it straightforward for purchasers to search out, buy, deploy, and manage third-party package and services that customers ought to build solutions and run their businesses.[3]

The marketplace includes thousands of package listings from widespread categories like security, networking, storage, machine learning, business intelligence, database, and DevOps. Marketplace, in addition, simplifies package licensing and acquisition with versatile analysis decisions and multiple preparation strategies. Customers can quickly launch pre-configured software with just a few clicks, and choose software solutions in AMI and SaaS formats, as well as other formats. Flexible evaluation choices embrace free trial, hourly, monthly, annual, multi-year, and BYOL, and find beaked from one supply.[2]

Essentially, cloud computing combines known technologies (such as virtualization) in ingenious ways to provide IT services "from the conveyor belt" using economies of scale. We'll currently look nearer at what the core technologies square to measure and that characteristics of their use in cloud computing square measure essential. [3]

1.1 Core cloud computing technologies [17]
Cloud computing builds heavily on capabilities available through many core technologies:

1.1.1 Web applications and services: Software as a Service (SaaS) and Platform as a Service (PaaS) square measure unthinkable while not net application and net services technologies: SaaS offerings square measure generally enforced as net applications, while PaaS offerings offer development and runtime environments for network applications and services.

For Infrastructure as a Service (IaaS) offerings, directors generally implement associated services and genus Apis, such as the management access for customers, using Web application/service technologies.

1.1.2 Virtualization IaaS offerings: These technologies have virtualization techniques at their terrible heart; as a result of PaaS and SaaS services square measure sometimes engineered on prime of a supporting IaaS infrastructure, the importance of virtualization additionally extends to these service models.

In the future, we tend to expect virtualization to develop from virtualized servers toward machine resources which will be used a lot of promptly for capital punishment SaaS services.

1.1.3 Cryptography: Many cloud computing security necessities square measure soluble solely by exploitation crypto-logical techniques. As cloud computing technologies develop, the list of core technologies supporting it is also likely to expand. Risk corresponds to the merchandise of loss event frequency (left) and probable loss magnitude (right). Vulnerabilities influence the loss event frequency.

1.2 Essential characteristics [17]
In its description of essential cloud characteristics, the America National Institute of Standards and Technology (NIST) captures well-using economies of scale:

1.2.1 On-demand self-service: Users will order and manage services while not human interaction with the service supplier, using, for example, a Web portal and management interface. Provisioning and de-provisioning of services and associated resources occur automatically at the provider.

1.2.2 Ubiquitous network access: Cloud services square measure accessed via the network (usually the Internet), exploitation of customary mechanisms and protocols.

1.2.3 Resource pooling: Computing resources accustomed offer the cloud service square measure realized employing a consistent infrastructure that's shared between all service users.

1.2.4 Rapid elasticity: Resources are often scaled up and down chop-chop and elastically.

1.2.5 Measured service: Resource/service usage is consistently metered, supporting the improvement of resource usage, usage reportage to the client, and pay-as-you-go business models.

2. OVERVIEW OF RESEARCH
Application marketplace gives an opportunity to the independent software vendors and freelancers to market and sell their API's and software through the Cloud platform directly to the customers. Application marketplaces are designed for Independent Software Vendors, Freelancers, Value Added Re-sellers and System Integrators who want to provide software as a service directly to the customers on the cloud platforms. Cloud machine images and application marketplace provides high performance and approximately 100% availability which proves to be an asset to any enterprise. Let's take an example which became a success story later using cloud services. There are a variety of stories out there regarding organizations that have created a giant jump into the cloud. Private or public, these organizations are typically trotted out as shining samples of sure-fire cloud implementations. Their stories became legendary among IT. Like any legends, though, there is the grand story so there is what really happened.

To find samples of these legendary cloud deployments, I did an online look for "companies that have emotional to the cloud." I found some articles with lists of firms that have adopted cloud computing. First on four of the lists is Netflix. Netflix is everybody's cloud success story, sure, however, it grew up within the cloud, having designed its terribly custom applications around the approach cloud works. [18]

Next, on the lists are firms like Zynga, Pinterest, and Instagram. Again, they need custom applications that were purposeful to

figure within the cloud. As startups, these businesses did not have physical storage space or capital to take a position in physical servers, so that they used the cloud to grow as they required. That's quite a completely different downside set than the one visage by most businesses. [18]

2.1 Our approach

We set up a google form with some questionnaire related to using cloud services, machine images and application marketplace for their enterprise. This questionnaire was forwarded using personal email, LinkedIn, WhatsApp groups of working professionals in the IT industry. Also, this survey was forwarded using social media pages related to cloud working professionals and experts and cloud computing forums. Our research provides a comprehensive view of the growing machine images and application marketplace in cloud computing, with scientific studies that span approx. 1 month and a total of 56 survey responses. This study reflects increasing needs of machine images and application marketplace in cloud technology, and providing opportunities to Independent Software Vendors, Freelancers, Value Added Re-sellers and System Integrators who want to provide software as a service directly to the customers on the cloud platforms. Our studies show how cloud computing and application marketplaces are changing the perspective and promoting server less computing.
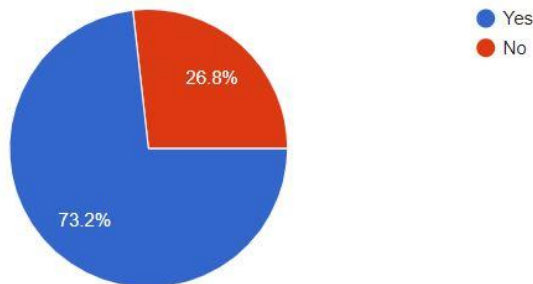

Fig. 1: Organizations using cloud services

The popularity of cloud services in the IT world is increasing, 73.2% of organizations have already migrated and opted cloud services. Among those organizations how many uses the Machine images and application marketplaces for their organizations is shown below.
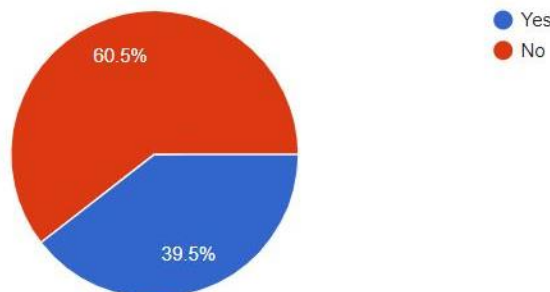

Fig. 2: Organizations using Machine Images and Application Marketplace.

Marketplaces are still not very popular in the industry because of a lot of factors we will discuss further in this paper. We found that cloud services are quite popular in the IT industry but we also found that organizations are not reluctant of using application marketplaces but many of them are not yet aware of that such services exist.

3. LITERATURE REVIEW

We see an increase in cloud usage on an enterprise level at the below diagram (Fig 3). As per statistics published by Forbes cloud adoption in the industry is increasing as compared to 2017 and AWS is leading the industry as the most adopted cloud for enterprise in 2018. [1]
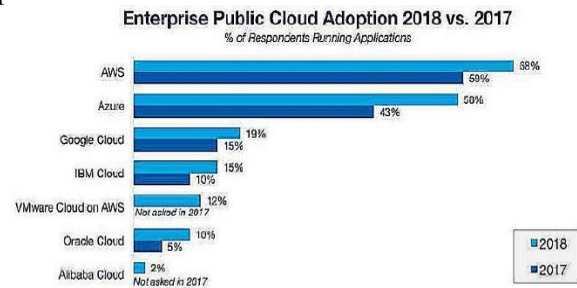

Fig. 3: Enterprise cloud adoption 2017 vs. 2018[1]

We found that cloud services are maturing over time for enterprises. There are more industry-focused services available now than earlier. Also, Financial Services has the best share of server pictures deployed in camera or public clouds, approaching nearly 100% versus a median adoption rate of 19. [1]
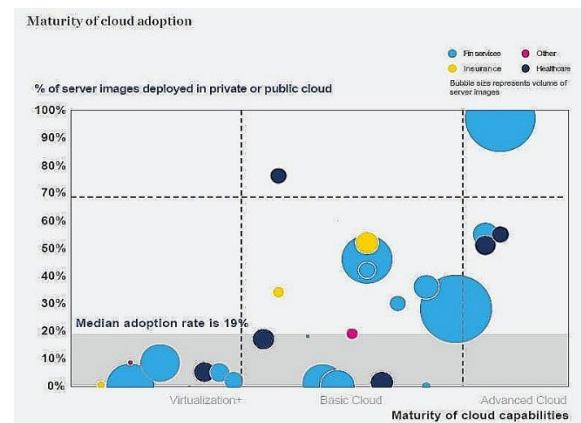

Fig. 4: Maturity of cloud adoption in enterprises [1]

A cloud marketplace is an internet storefront operated by a cloud service provider. A cloud marketplace provides access to its customers to code applications and services that area unit designed on, integrate with or complement the cloud provider's offerings. A marketplace usually provides customers with native cloud applications and approved apps created by third-party developers. Applications from third-party developers not solely facilitate the cloud supplier to fill niche gaps in its portfolio and meet the requirements of additional customers, however, they additionally give the client with peace of mind by knowing that everyone purchases from the vendor's marketplace can integrate with one another swimmingly. Whereas machine images allow users to create and manage virtual applications and environments over the provided infrastructure.

4. SURVEY ANALYSIS

The survey conducted for this research consisted of a questionnaire related to cloud computing machine images and application marketplace for SaaS and PaaS for the enterprise. This survey was taken by the working professionals which gave us insight about how the cloud services are growing at an enterprise level. We got responses from different departments and different organizations as shown below (figure 5).
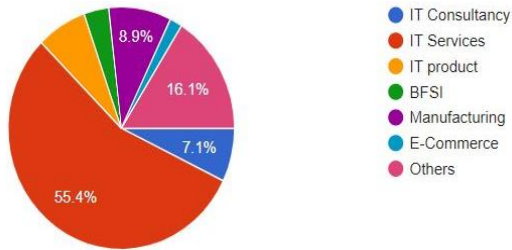
Fig. 5: Organizations

Out of these, a total of 73.2% organizations uses cloud services as shown above (figure 1). Among these organizations IT service and IT consultancy industry uses the maximum cloud services in form of public, private, hybrid, and community cloud as shown below (figure 6).
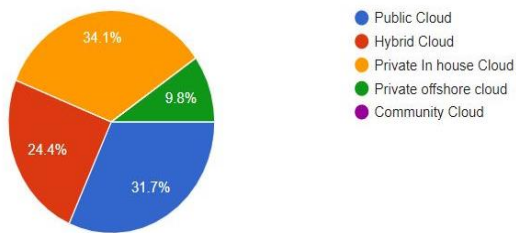

Fig. 6: Type of cloud (as per the deployment model)

IaaS (Infrastructure as a Service) and SaaS (Software as a Service) are the two most used services in the IT industry (Figure 7) where the user need not take care about the underlying hardware or the platform on which they are to develop the software or services. Also, there are not just these services on the cloud; cloud vendors provide other services also like DRaaS (Data Recovery as a Service) and malware as a service but major of the cloud services are categorized among IaaS, PaaS, SaaS only.
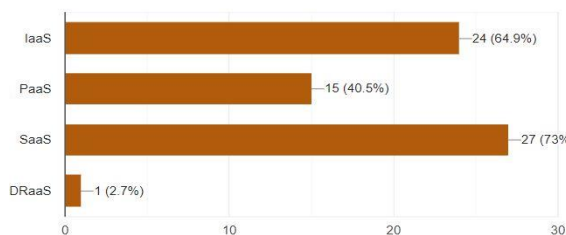

Fig. 7: Usage of cloud services

There are a lot of reasons for which a company opt for service on the cloud which can be anything among scalability, ease of access, availability or performance (figure 8). We found that a maximum number of organizations opted for cloud for flexibility and scalability of the cloud and also for the performance. Though there is still a controversy because many organizations who opt and who do not opt for cloud services provide security as the common issue for the decision.
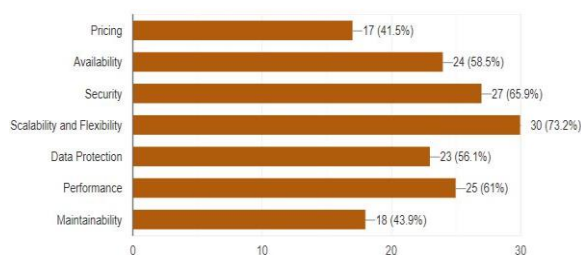

Fig. 8: Why organizations opt for cloud for their enterprise

For the organizations who opt for cloud services storage and database API's comes out to be most common and most popular among the organizations (figure 9) and for the second popular choices comes the computer (Processing Power), business applications and security, identification, and compliance respectively. Among these organizations, a new finding comes out in this survey about which services they expect to see in the near future for their organization in the marketplace namely customer support, automation, ML, IOT, and some business applications supporting/predicting current and future business needs.
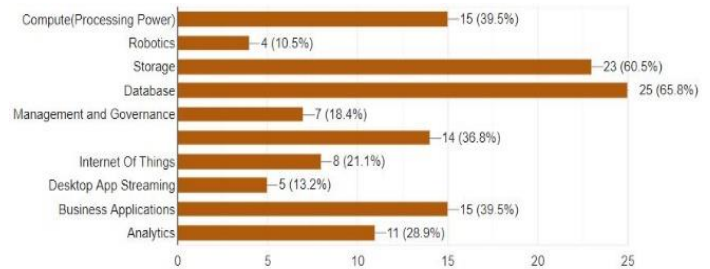

Fig. 9: Most used API's

Now, there are around 26.8% of organizations which does not consider cloud services for their enterprise (figure 1). As we found there are a lot of reasons for not opting cloud for an organization like security, data migration, pricing or losing control of the cloud services and data (figure 10). But it's not that these organizations will not use cloud services in the future as well. We found that some of these organizations are planning to move to the cloud right now and evaluating their options and some planning to move to the cloud in near future.
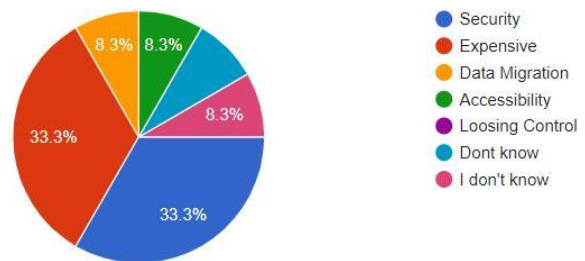

Fig. 10: Reasons for not opting for cloud services

As per our findings, AWS is leading the Cloud market in providing marketplace and machine image services followed by Microsoft Azure, IBM, Zoho and others (figure 11).
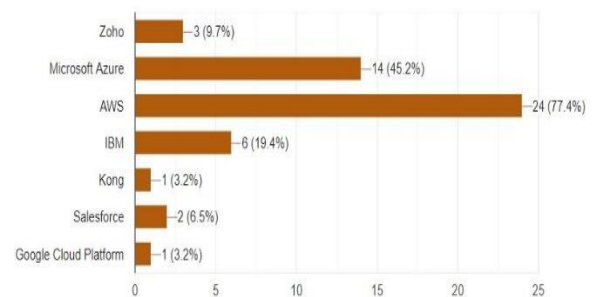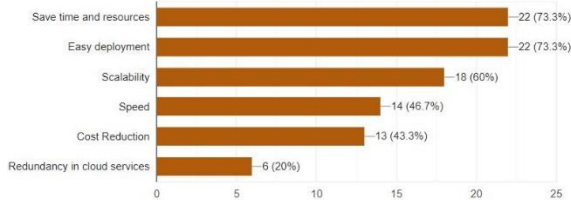

**Fig. 11: Leading service providers for Marketplace and Machine Image**

These enterprises mostly opt for application marketplace and machine images because of the reasons like time and resource saving, ease of deployment, scalability, etc. (figure 12).

**Fig. 12: Reasons why organizations opt for marketplace and machine images**

These organizations would like to see more and more services on the marketplace in the near future like automatic staging in deployment, data encryption and data backup for a longer duration for their enterprise.

Then there are organizations which use cloud services but do not consider Cloud marketplace and machine images for a few reasons like upfront payment for the services, deployment difficulties, access of enterprise data and security (figure 13).
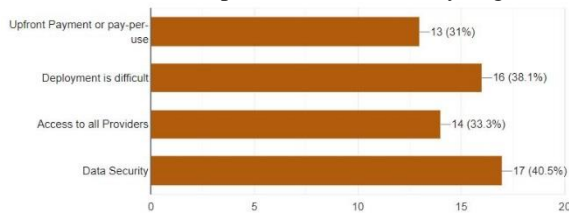
Fig. 13: Reasons for not opting cloud marketplace for the organization.

Our findings tell us that these organizations might not be using cloud services right now but they are definitely reconsidering their options and planning to move to cloud and application marketplaces and machine images in the near future (figure 14). Only there are 12.5% among these organizations which feel that cloud machine images and application marketplaces are not a very viable option for their organizations.
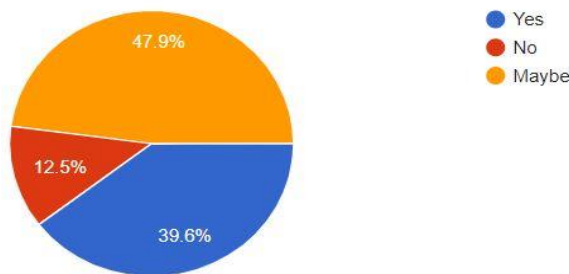
Fig. 14: Organizations which are planning or evaluating marketplaces for their organizations.

We have seen that a 26.8% of the organizations are skeptical about moving to the cloud environments (figure 12) yet the majority of these organizations are willing to explore Application marketplaces and machine images in the future.

5. CONCLUSION
Nothing innovates faster than a Developer Community. In this, no company's developers or no matter how famous company is or no matter how intelligent developer they have. Developer's community is faster than anyone in innovation and features.

Simplicity is the ultimate sophistication/the better simplicity, the better sophistication. Customers ask for a new feature and update,

and you have to provide them happily. At the end more features you have, the better your product you give to customers. If the product is more complicated to use for users than, users face problems and get confused and frustrated. Because of that growth of the product will go down.

Users will pay for things they need. In this, users will pay only for those features which they want to use or needy features for their product.

In our survey, we found that Application marketplace and Machine Images are still in the development phase and there are a lot of services which are needed by the industry to still appear onto the application marketplace. Organizations are also evaluating their options to move to cloud services and also looking forward to using application marketplaces for their organizations. If we talk at an enterprise level, we analyzed that security is the most considered and evaluated option for making the decision about opting a cloud service or dropping the idea to move a cloud. There are other considerations also before an organization decides to opt for a cloud service but security is the biggest concern of any organization.

6. ACKNOWLEDGMENT

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