International Journal of Scientific Research in Computer Science, Engineering and Information Technology
© 2018 IJSRCSEIT | Volume 3 | Issue 8 | ISSN : 2456-3307
DOI : https://doi.org/10.32628/CSEIT183864

Comparative Study of Cloud Computing Delivery Models

Vinnarasi. J[1], Dr. Roseline Selverani. D[2]
[1]Assistant Professor, Department of Computer Science, Holy Cross College, Trichy, Tiruchirappalli, Tamil Nadu, India
[2]Assistant Professor, Department of Computer Science, Holy Cross College, Trichy, Tamil Nadu, India

ABSTRACT

Cloud computing is a type of computing that depends on shared computing resources instead of storing local servers. There are three cloud delivery models Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), Software-as-a-Service (SaaS) which represent exact, prepackaged mixture of IT resources accessible through a cloud provider.

Keywords : IaaS, PaaS, SaaS, Amazon Web Service, Microsoft Azure, Apprenda, Red Hat OpenShift

I. INTRODUCTION

Cloud Computing is a growing technology that uses the internet and central remote servers to maintain data and applications. Cloud computing is a kind of computing technique where IT services are provided by massive low-cost computing units connected by IP networks [1]. Cloud computing allows buyers and companies to use applications without installation and access their personal files at any computer with internet access. Simply, cloud computing means pay for what we use. Many specialized services used in cloud delivery model but IaaS, PaaS, SaaS services are the three main pillar of cloud computing delivery models. Using such cloud delivery model, we can design and create new applications, store and recover data, hosting the websites etc.

II. METHODS AND MATERIAL

A. Infrastructure as a Service

Infrastructure as a Service (IaaS) is the delivery of hardware (server, storage and network), and associated software (operating systems virtualization technology, file system), as a service [2]. Infrastructure as a service provides virtualized computing resources over the internet. The cloud provider is accountable for guaranteeing the maintenance of all the hardware and virtualized services. IaaS includes virtual server space, IP addresses, network connections, internet connection, firewalls, bandwidth, load balancers etc. Some of the examples for IaaS are Amazon Web Service, Microsoft Azure.

Benefits of Infrastructure-as-a-Service (IaaS):

- IaaS is a cost saving model. It is simply pay-as-you-go model also it offers organizations pay for only the capacity needed at any given time.
- IaaS provides good Flexibility and Scalability.
- Numerous consumers can deal with a single piece of hardware anyplace and any time.

- Infrastructure as a Service offers greater reliability across multiple servers and data centers.

B. Platform as a Service

The capability provided to the consumer is to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages, libraries, services, and tools supported by the provider [3]. PaaS offers an environment where developer can develops and creates and deploys applications and do not need to know how much memory and how many processor their application will be using [4]. Platform as a service, it provides computing platforms which typically includes operating system, programming language execution environment, database, web server etc. PaaS model represent 'Ready to use' Environment that establishes a set of pre-packaged products and tools used to support the entire delivery lifecycle. PaaS enables the users to focus on developing and running new applications instead of spending their time, money and energy in building and maintaining the underlying infrastructure. Few examples for this model are Apprenda, Red Hat OpenShift

Benefits of Platform-as-a-Service (PaaS):

- PaaS is very convenient for the user.
- Platform-as-a-service provide readymade infrastructure which they can access anywhere via a web browser.
- It removes the capital expenses acquired for on-premises hardware and software.

C. Software as a Service

Software as a service contains mass services which mean no need to download and manage. We can use this service through the network, In this service everything was managed by third party seller. Software-as-a-Service is a software distribution model in which applications are hosted by a vendor or service provider and made available to customers over a network, typically the Internet [5]. The cloud provides access to many applications for development, arrangement, and executing other useful tasks like working on excel, word online. Gmail is the best example of Saas. Few other examples for this model are Google Applications, Sales force.com.

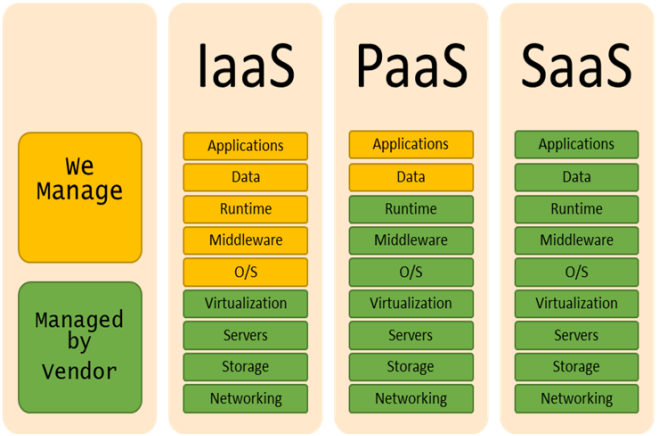
Benefits of Software-as-a-Service (SaaS):

- Software-as-a-Service is a cost saving model.
- SaaS providers upgrade the result and it becomes available for their customers.
- SaaS is an Easy to use delivery model.

Each worker can easily customize applications to fit their business processes without disturbing the common infrastructure.

III. COMPARISION BETWEEN SAAS, PAAS AND IAAS

The Overview of IaaS, PaaS and SaaS are represented in the following figure (Figure1).



The comparative study among the various cloud delivery models is given in the following table (Table 1). Table 2 shows Worldwide Public Cloud Service Revenue Forecast (Billions of U.S. Dollars) by

Gartner, the world's leading research and advisory company.

Table 1. Comparison among various delivery models

Delivery Models	Users	Services	Example	Market Dominance (According to a Gartner Group estimate 2018)
SaaS	Business User	Email, CRM, Business Website testing.	Amazon EC2, Windows Azure, Rack space, Google Compute Engine	$73.6 billion
PaaS	Developer	Service and application test, development and deployment.	AWS Elastic Beanstalk, Windows Azure, Heroku, Force.com	$15.0 billion
IaaS	System Manager	Virtual machine, operating system, Network, Storage, Recovery Services.	DigitalOcean, Linode, Rackspace, Amazon Web Services (AWS), Cisco Metapod,	$40.8 billion

Table 2. Gartner Forecasts Worldwide Public Cloud Revenue(Billions of U.S. Dollars)

Models	2018	2019	2020	2021
SaaS	73.6	87.2	101.9	117.1
PaaS	15.0	18.6	22.7	27.3
IaaS	40.8	52.9	67.4	83.5

IV. CONCLUSION

Cloud computing is an innovative technology to use and deliver IT services. It provides remotely provisioning scalable and measurable resources. The three pillar of the cloud delivery models encompass a natural provisioning hierarchy, allowing for opportunities for the combined application of the models to be explored. The IaaS cloud delivery model offers cloud consumers a high level of organizational control over 'raw' infrastructure-based IT resources. The PaaS cloud delivery model enables a cloud provider to offer a preconfigured environment. The SaaS cloud delivery model offers services through the internet. In this model third party will manage our cloud services.

V. REFERENCES

[1]. Ling Qian, Zhiguo Luo, Yujian Du, and Leitao Guo, "Cloud Computing: An Overview". Springer-Verlag Berlin Heidelberg 2009

[2]. Sushil Bhardwaj, Leena Jain, Sandeep Jain2, "Cloud Computing: A Study Of Infrastructure As A Service (Iaas)", International Journal of Engineering and Information Technology(IJEIT) ISSN 0976-0253 (Online), Volume 2(1), 2010.

[3]. Peter Mell, Timothy Grance, "The NIST Definition of Cloud Computing", NIST Special Publication 800-145 .

[4]. Dimpi Rani, Rajiv Kumar Ranjan "A Comparative Study of SaaS, PaaS and IaaS in Cloud Computing", International Journal of Advanced Research in Computer Science and Software Engineering, Volume 4, Issue 6, June 2014

[5]. S.Satyanarayana, "Cloud Computing : SaaS", GESJ: Computer Science and Telecommunications 2012|No.4(36).

[6]. https://www.gartner.com/newsroom/id/3871416