Cloud Computing Platform: A Perspective Overview

Neha Goel*, Abhishek Aggarwal**

* Student of M.Tech. College in shri krishan inst.of Engg. & Tech. Affiliated to kurukshetra university kurukshetra
* Astt. Prof. College in shri krishan inst.of Engg & Tech. (Kurukshetra)

Abstract- Traditional business applications have always been very complicated and expensive. The amount and variety of hardware and software required to run them are daunting. You need a whole team of experts to install, configure, test, run, secure, and update them. When you multiply this effort across dozens or hundreds of apps, it's easy to see why the biggest companies with the best IT departments aren't getting the apps they need. With cloud computing, you eliminate those headaches because you're not managing hardware and software-that's the responsibility of an experienced vendor like salesforce.com. In this paper we define a various platform of cloud computing and define the comparison between various infrastructure as a service platform and platform as a service platform.

Index Terms- Customer relationship management , virtual machine.

I. INTRODUCTION

Traditional business applications have always been very complicated and expensive. With cloud computing, you eliminate those headaches because you're not managing hardware and software-that's the responsibility of an experienced vendor like salesforce.com. The shared infrastructure means it works like a utility: You only pay for what you need, upgrades are automatic, and scaling up or down is easy. Cloud-based apps can be up and running in days or weeks, and they cost less. With a cloud app, you just open a browser, log in, customize the app, and start using it. Businesses are running all kinds of apps in the cloud, like customer relationship management, HR, accounting, and much more. Some of the world's largest companies moved their applications to the cloud with salesforce.com after rigorously testing the security and reliability of our infrastructure

II. CLOUD APPLICATION DEVELOPMENT PLATFORMS

Cloud Application Development Platforms Application development, deployment and runtime management have always been reliant on development platforms such as Microsoft's .NET, Web Sphere, or JBoss, which have been deployed on-premise traditionally. In the Cloud-computing context, applications are generally deployed by Cloud providers to provide highly scalable and elastic services to as many end users as possible. The need for support as many users to access and utilize the same application services, with elastic resources allocation have led to enhancement in development platform technologies and architectures to handle performance, security, resource allocation, application monitoring, billing, and fault tolerance. There are several solutions available in the PaaS market, to mention few-: Google App Engine, Microsoft Windows Azure, Force.Com, and Manjrasoft Aneka

(a)Google application engine

Google App Engine provides an extensible runtime environment for web based applications developed with Java or Python, which leverage huge Google IT infrastructure. Google App Engine is offered by Google Inc. Its key value is that developers can rapidly build small web based applications on their machine and deploy them on the Cloud. A notable thing is that Google App Engine provides developers with a simulated environment to build and test applications locally with any operating system or any system that runs a suitable version of Python and Java language environments. Google uses the Java Virtual Machine with Jetty Servlet engine and Java Data Objects.

(b)Windows Azure

The Windows Azure Platform [1] consists of SQL Azure and the .NET services. The .NET services comprises of Access Control services and .NET service bus. Windows Azure is a platform with shared multitenant hardware provided by Microsoft. Windows Azure application development mandates the use of SQL Azure for RDBMS functionality, because that is the only coexisting DBMS functionality accessible in the same hardware context as the applications.

(c)Force.com

Force.com is a development and execution environment that is independent for Salesforce.com. Force.com is the best approach for Platform as-a-Service (PaaS) for developing CRM based application and, with regards to the design of its platform and the runtime environment is based on the Java technology. The platform uses a proprietary programming language and environment called Apex code, which it has a reputation for simplicity in learning and rapid development and execution.

(d)Manjrasoft Aneka

Aneka [2] is a distributed application platform for developing Cloud applications. Distributed means that
Aneka can seam together any number of Windows based physical or virtual desktops or servers into a network of interconnected nodes that act as a single logical "application execution layer." The middleware is managed and monitored with advanced tools that allow monitoring applications' performance and the system status in order to meet the Service Level Agreements (SLAs) made with the users. Aneka-based Clouds can be deployed on a variety of hardware and operating systems including several flavors of the Windows and Linux operating system families. This flexibility allows Aneka to virtually harness almost all the different types of infrastructure

and runtime environment to serve application execution on demand.

(e)Amazon web services

The Amazon Web Services (AWS) are a collection of re- mote computing services (also called web services) that together make up a Cloud computing platform, offered over the Internet by Amazon.com. Since early 2006, Amazon Web Services (AWS) has provided companies of all sizes with an infrastructure web ser- vices platform in the Cloud. With AWS you can requisition compute power, storage, and other services-gaining access to a suite of elastic IT infrastructure services as your business demands them. Amazon's Cloud services offerings consist of following services:

1. Elastic Compute Cloud (EC2)
2. SimpleDB
3. Simple Storage Service (S3)
4. Relational Database Service (RDS)
5. CloudFront
6. Simple Queue Service (SQS)
7. Elastic MapReduce
8. Elastic Block Store (EBS)

(f)GoGrid

GoGrid is a Cloud hosting service that enables automated provisioning of virtual and hardware infrastructure over the Internet. GoGrid is an Infrastructure as a Service (IaaS) Cloud provider.GoGrid Cloud Hosting offers developers the F5 Load Balancers for distributing application service traffic across servers, as long as IPs and specific ports of these servers are attached. The load balancer [4] allows Round Robin algorithm and Least Connect algorithm for routing application service requests.

(g)Eucalyptus

Eucalyptus is an open source Cloud computing platform [3]. It is composed of three controllers. Among the controllers, the Cluster Controller is a key component to application service provisioning and load balancing. Each Cluster Controller is hosted on the head node of a cluster to interconnect outer public networks and inner private networks together. By monitoring the state information of instances in the pool of server controllers, the Cluster Controller can select the available service/server for provisioning incoming requests.

(h)Rackspace

The Rackspace Cloud is a growing set of Cloud-related products and services billed on a utility computing basis. Offerings include web application Platform, Cloud Storage Cloud Load Balancers, Cloud Databases, Cloud Backup, and Cloud Monitoring. The Rackspace Cloud was one of the first commercial cloud computing services.

(i)Terremark

Terremark brings the power of the cloud to the enterprise with solutions built to integrate seamlessly into your existing I.T. infrastructure, compatible with your existing applications, and conforming to your policies and compliance needs, helping you move faster, respond quicker, and accelerate innovation. Terre mark's Enterprise Cloud Services give you precise, dynamic allocation of computing resources with the scale, performance and security to handle enterprise-wide applications. Large organizations, IT executives and multi-site teams will appreciate the robust solution for its multi-user capacity, dedicated resource pool architecture and role-based security model as well as private network connectivity and physical device integration.

III. TEST CLOUD PERFORMANCE

In order to test cloud performance, We have selected 4 types of tests and benchmarking 5 native applications running on 5 different cloud platforms:

Tests

(a)Requesting a Small Object – 1x1 pixel GIF

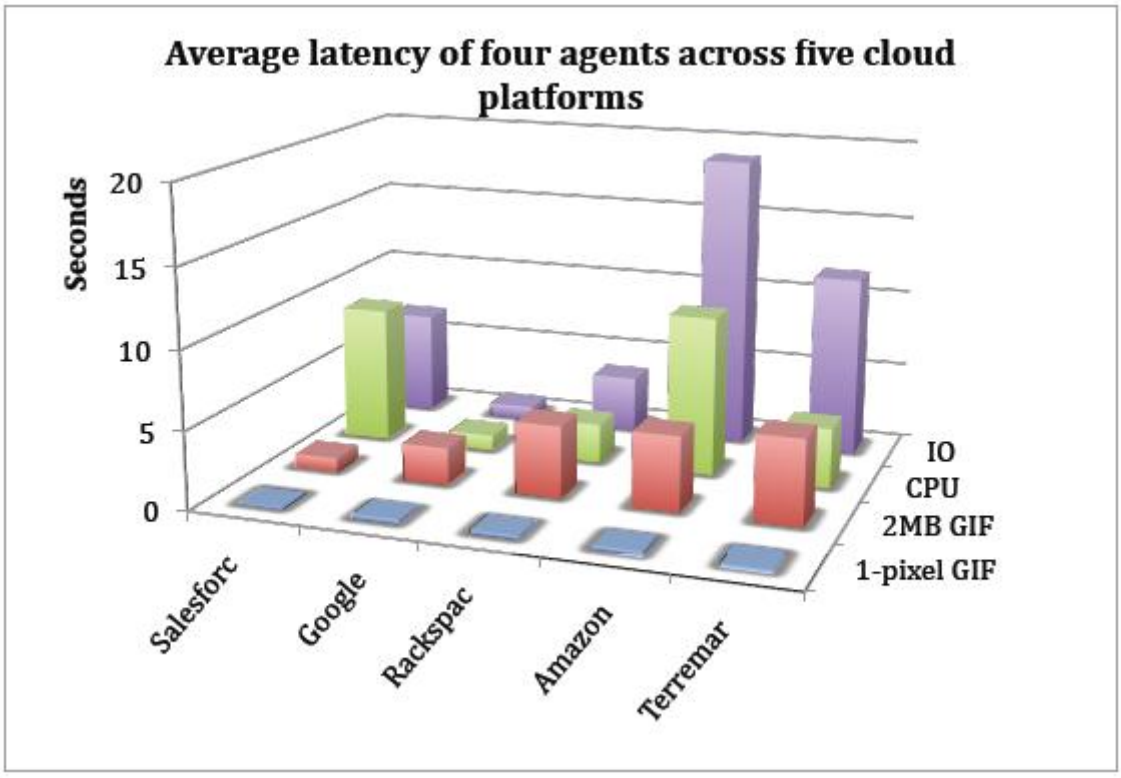
(b)Requesting a Large Object – 2 MB image

(c)Performing a CPU Intensive Task – 1,000,000 sine and sum operations. For Salesforce.com a 100,000 ops load was used because of a platform limitation.

(d)Performing an IO Intensive Task – Querying a 500,000 rows table using a MySQL database with cleared cache for Amazon, Rackspace and Terremark, a data store for Salesforce.com, and a BigTable for Google.

To benchmark native applications, the authors chose 5 real-world websites developed for the platform they ran on. The websites were written in Apex for Salesforce.com, in Java and Python for GAE, websites running on Linux servers on Xen server for Amazon and Rackspace, and websites running on VMware VMs for Terremark. The names of the applications were not disclosed.

Result- The latency of the 4 tests for all 5 cloud platforms were as following-



All platforms performed well for small objects, while PaaS platforms performed better than IaaS for larger objects. Salesforce.com performed poorly for CPU intensive tasks although the test included only 10% of the number of operations used on the other platforms. Google and Rackspace were best at the IO test.

IV. COMPARISON OF VARIOUS PLATFORMS

Cloud provider	**Amazon EC2**	**Windows Azure**	**Google App. engine**
Classes of utility computing	Infrastructure service	Platform service	Platform service
Target applications	General-Purpose applications	General-Purpose applications	Traditional Web applications
Computation	OS level on a Xen virtual machine	Microsoft Common Language Runtime (CLR) VM; Predefined roles of app. instances	Predefined web application frameworks
Storage	Elastic Block Store; Amazon Simple Storage Service (S3); Amazon SimpleDB	Azure storage service and SQL Data Services	Big Table and Megastores
Auto Scaling	Automatically changing the number of instances based on parameters that	Automatic scaling based on application roles and a configuration file	Automatic Scaling which is transparent to users.

	users specify.	specified by.	

V. PERFORMANCE MEASURING REPORT

The authors of the performance measuring report drew up a number of conclusions summarizing the lessons learned during the tests-

(a).Understand the profile of your cloud-Different cloud provider are good at different tasks. You will need to choose the size of your virtual machines in terms of CPU, memory and so on in order to deliver good performance.

(b).Choosing between PaaS or IaaS depend on your intended workload- If you are willing to recode your application to take advantages of big data systems like big table, you can scale well by choosing a PaaS cloud. On the other hand if you need individual machines you will have to build elasticity into your IaaS configuration.

(c).Monitor usage and governors- In PaaS if you exceed your rate limits your users will get errors.

(d). PaaS means you are in the same basket- We noticed that if you are using a PaaS, when the clouds gets slow, everyone gets slow. With IaaS, there are more separation of the CPU and the server responsiveness but you are still contending for shared storage and network bandwidth.

VI. CONCLUSION

Cloud computing has recently emerged as a compelling paradigm for managing and delivering services over the Internet. The rise of cloud computing is rapidly changing the landscape of information technology, and ultimately turning the long-held promise of utility computing into a reality. In this paper we define various platform of cloud computing. In which we define If you are willing to recode your application to take advantages of big data systems like big table, you can scale well by choosing a PaaS cloud. On the other hand if you need individual machines you will have to build elasticity into your IaaS configuration.

REFERENCES

[1] D. Chappell, Introducing the Windows Azure Platform, David Chappell & Associates, October 2010.

[2] C. Vecchiola, X. Chu, and R. Buyya, Aneka: A Software Platform for .NET-based Cloud Computing, High Speed and Large Scale Scientific Computing, 267-295 pp., IOS Press, Amsterdam, Netherlands, 2009.

[3] Waqar, Adeela Raza, Abbas, Haider: User Privacy Issues in Eucalyptus: A private cloud Computing Environment. In International Conference on Trust, Security and Privacy in Computing & Communication (TrustCom), Changsha, China (Nov 2011)

[4] Michael Sheehan: GoGrid Exchange: CohesiveFT VPN- cubed Available on GoGrid Cloud, (Jan, 2010)

AUTHORS

First Author – Neha Goel, Student of M.Tech. College in shri krishan inst.of Engg. & Tech, Affiliated to kurukshetra university kurukshetra

Second Author – Abhishek Aggarwal, Astt. Prof. College in shri krishan inst.of Engg & Tech. (Kurukshetra)