AN EMPIRICAL ANALYSIS OF PLATFORM AS A SERVICES AND CLOUD SQL

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ABSTRACT

Cloud computing is one method of information retrieval technology, which delivers precious resources towards the people as services. Cloud services are classified as three classes, that is Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). There are numerousÿþ leading IT solution providers offering to the customers. There are a number of Cloud Service Providers available in a business environment. This paper introduces and describes about how to get platform as a Service PaaS (Google API with Cloud SQL) among these three cloud service providers, as well as maintain a database in Cloud SQL.

Keywords - Cloud computing, Cloud SQL, Platform as a service.

I. INTRODUCTION

Cloud computing is a technology that utilizes the web and focal remote servers to support information and requisitions. It permits consumers and organizations to pay for provisions without establishment and access their individual indexes on any PC with web access. These technologies take into account substantially more proficient processing by unifying space, memory, transforming and transfer speed. It offers a scalable surroundings by using a high frequency of availability, reliability and adaptabilityÿþ that allows the customer to formulate and deploy a different type of application within a cloud environment, and many organizations looking to move Cloud Computing, is essential to understand the different aspects of Computing and also to assess their personal situation and decide which kinds of solutions are good for their unique requirements[14].

A. Choosing a cloud provider

In the business market, a number of providers provides the cloud service. Each service provider has a some specific function to control the users based on the type. Before choosing a provider a user asks, what type of services i want?, What are the services available?, What type of controls are

provided to the user, scalability, cost and How the information will be intend with resources? . This information is to be clarified with the provider. There are three varieties of cloud providers that any user can subscribe to SaaS, PaaS and IaaS.

These three can be found in the amount of control based upon the organization information [1-2].

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SaaS-Consumers tend to make use of the provider's applications running in a cloud environment, which happen to be accessible from various client devices through either a thin client interface, such as a browser (e.g., web-based email), or a program interface. However, the consumer is not able to manage or control the underlying cloud infrastructure such as network, servers, operating systems, storage, individual application capabilities, when using the limited exception of specific user application configuration settings[15].

PaaS-It facilitates the consumer with the deployment of cloud infrastructure such as consumer-created applications, and other application that has been created using programming languages, libraries, services and even tools in turn supported by the provider. The consumer does not manage the underlying control towards cloud infrastructure as network, servers, operating systems and storage. But it has the control over the deployed applications and configuration settings of the application hosting environment.

IaaS-The consumer is provided with the facilities such as processing, storage, networks along with other primary computing resources through deployment of arbitrary software including operating systems and applications. The consumer fails to control the underlying cloud infrastructure but manages the operating systems; storage, applications and limited aspects of networking components (e.g., host firewalls) [3].

Cloud have four deployment models such as private, public, hybrid and community [1] [4].

◆ Public Cloud might be accessed by any subscriber using an internet connection and access to the cloud space.

◆ Private Cloud is established for a specific group or organization and limits access to just that group.

◆ Community Cloud is shared in the middle of two or more organizations that have similar cloud requirements.

◆ Hybrid Cloud is the combination of at least two clouds, where the clouds included are a mixture of public, private, or community

B. Google App Engine

Google App Engine is quite different from most of the cloud system because it is easy to access, flexible, low cost, easy deployment and further more it offers a development platform to develop applications under hosting platform [5]. The traditional method of split up between formal and unformal computational tire and storage tire can be known as a pure PaaS cloud platform. The discovery and virtualization process is vesible in IaaS model, which completely differs form this model. The model has its capacity to resist itself in selling propositions in terms of capacity charge requirements.

Google App Engine programming languages are developed environment with Java, Go! and Python, which is best sutible for web applications. The Engine works better in assuming best period of no CPU utilization(such as human think time) when requested for structure. However Google measures CPU utility time as per the request. The automatic scaling, high availability mechanism and proprietary data storage are certain

constraints available for Google App Engine. If the application fits within those constraints, the cheaper way of scaling can be build automatically within the largest cloud on the planet [3].

C. Google Cloud SQL

Google Cloud SQL is a fully-managed web service that enables the creation, configuration, manages relational databases that relies on Google's infrastructure and maintains databases, allows focusing on the applications and services. It also offers MySQL database, Google Cloud SQL to move data and all kinds of applications within the cloud. This provides high data portability and helps to achieve a faster time to market, quickly leverage the existing database, while creating a Google Cloud SQL instance it enables the user with synchronous or asynchronous replication for data. Google Cloud SQL is a kind of MySQL database that relies on Google's infrastructure. It has all possible capabilities and functionality of MySQL with a few additional features. It is easy to use and does not need any sort of software installation, maintenance and it is ideal for small- to medium-sized applications [3] [11][6].
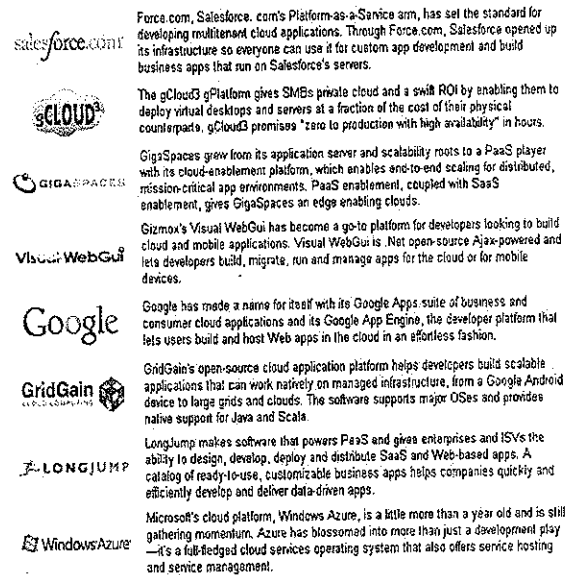
D. Platform as a Service (PaaS)

Middleware is the most essential medium involved in running cloud computing applications which is categorized in PaaS. Middleware plays a vital role in as database, operating system, runtime environment, web servers, application servers and an range of other needed components. The developers can able to develop their applications and deploy in PaaS layer. PaaS provide a variety of configurations for developing and deploying applications in cloud environment. A few primary advantages of PaaS are listed below[12][13][8].

♦ Quick launch of new projects or products, without worrying about licensing, software, etc.

♦ PaaS offers may also include facilities for application design development, testing, deployment and services such as team collaboration

♦ Web service integration, marshalling, database integration, security, scalability, storage, persistence, state management, application instrumentation, and developer community facilitation[16][9].

E. The Top Level Platform as a Service (PaaS) Vendors

There are different types of PaaS vendors obtainable in cloud, which intergrates different services for hosting applications and deploying applications in cloud environment. It provides varying quantities of scalability and price. Many cloud providers available in the business market, below in fig 1 shows the short collection of the few leading players on the market [10].

Figure 1 : Top Level Platform as a Service (PaaS) Vendors

II. WORKING WITH CLOUD SQL

To operate under Google Cloud SQL, first we need a legitimate Google account. Once users create an account then can obtain Cloud SQL service. Check out Google APIs Console, it certainly will list all the possible services; Fig. 2 shows many of the services including Cloud SQL. Here all services naturally are in off mode and user can turn it on by clicking the button but few services can't beÿþ activated by clicking it, instead user can send request to gain access to the particular service. Click on the request access button against Google Cloud SQL and it'llÿþ take user towards the new window called Google Cloud SQL Limited Preview Signup, where user uses need to fill up their contact information and database usage details for instance, the dimension of the database, the utmost size of a single record, specifically how many records are there in a database, a range of peak queries/transactions per second on the database, number of average queries/ transactions per day on the database, Do you plan to use SQL to replace or augment Data store, what programming language to use and build database applications, let us identified the problems tried to solve with Google Cloud SQL as well as what are the existing systems or database are planned to get replaced or augmented with Google Cloud SQL. Once the user fills all these click submit button and such details will certainly sent to the Google service specialistÿþ. Following a weeks of will be given permission to utilize the Cloud SQL service.

Fig 2 shows the Google API's Console after the activation of Cloud SQL Service click Google Cloud SQL which is available under the API Project, now we have to create a new instance (project) ,then click the instance shown in fig 3, you will be in your Dashboard shown in Fig 4.,, Fig 5 shows the Menu Options available in Google API's Console. Here you can find three menu options such as Dashboard, Logs and SQL Prompt. You just click SQL

prompt, where you can type and execute SQL queries and verify the result [7].

Fig 6 shows the SQL prompt where we can type and execute the SQL queries. Here a table called "Iris" has been created and stored in the Cloud. Fig 7 shows the SQL prompt, where the insert query has been executed and 14 records were inserted in Iris table. Fig 8 shows the SQL prompt, where the Select query has been executed and the records were retrieved from the Iris table.
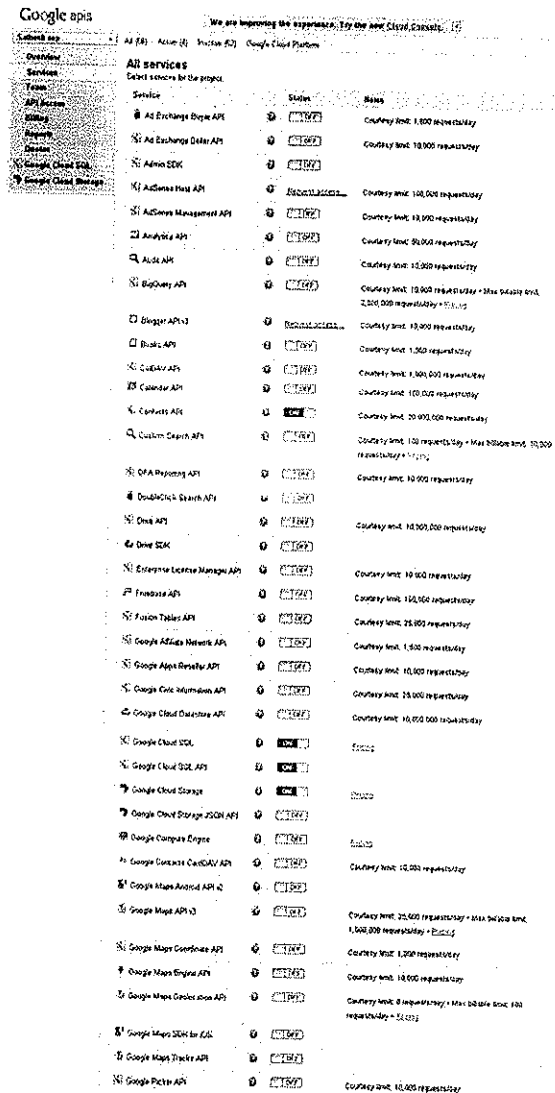

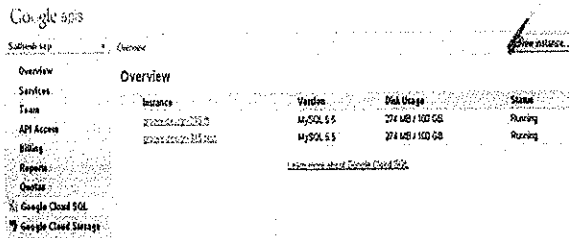**Figure 2 : Google APIs screen – Google APIs screen over the cloud SQL service is ON**
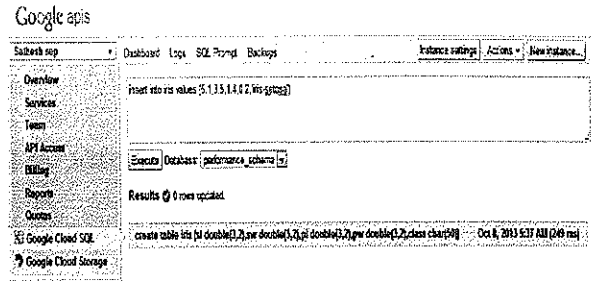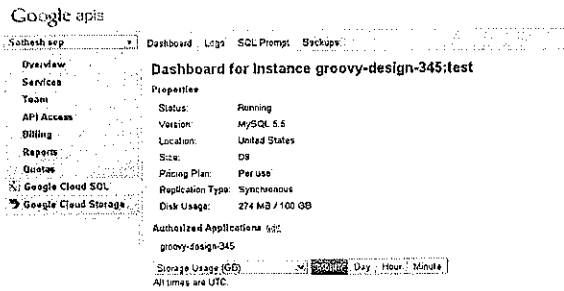
Figure 3 : Instance creation in Cloud SQL

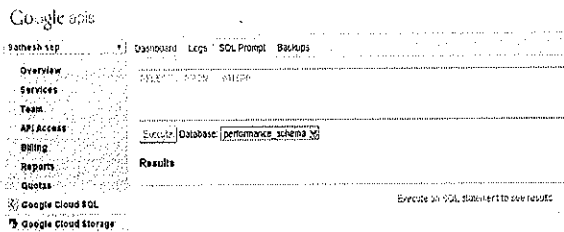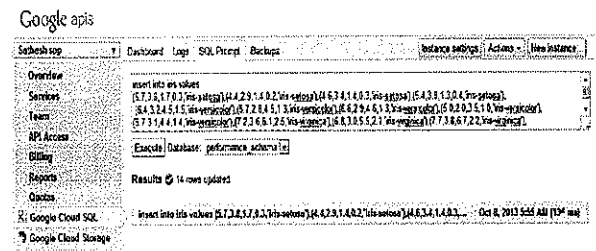Figure 4 : Google APIs dashboard screen

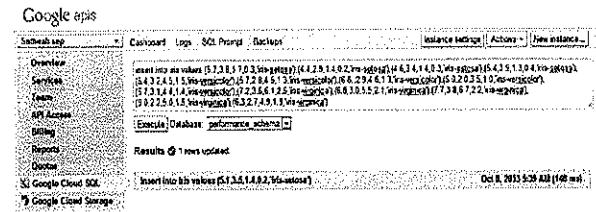Figure 5 : Google APIs menu option

Figure 6 : Google APIs SQL prompt

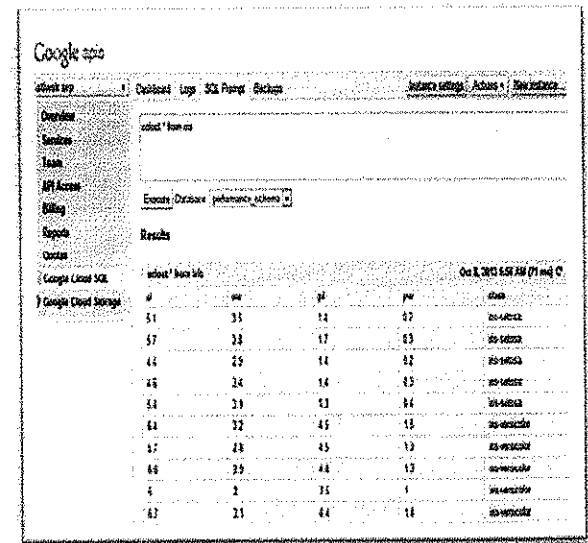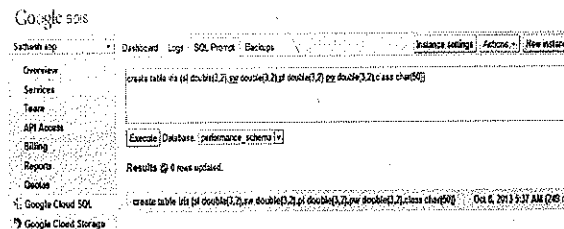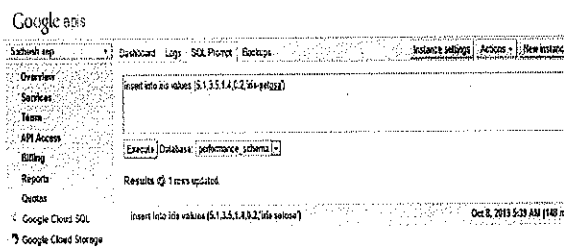Figure 7 : Google APIs SQL prompt (insert query executed)

Figure 8 : Google APIs SQL prompt (select query executed)

III. Conclusion

Cloud computing helps the several business organizations, to improve their business perspective. This study reveals that all the three services among the Google Cloud service provider are given the opportunity for maintaining voluminous business data through Google Cloud SQL and it provide valuable service for business organization to improve their business, and also it provides infrastructure, cost and platform sufficiently.

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