

Database Management System as a Cloud Service

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Abstract– A cloud database management system can be defined as a distributed database that allows us delivery of computing as service instead of product and sharing of resources as well as software between multiple devices over a network and has a tendency to grow significantly in future. In this paper we discuss about database management system as a cloud service. We focus on three important characteristics of cloud computing which are considered as the most troubled issues of cloud platform. We review cloud database challenges such as internet speed, multi-tenancy, privacy and security. At the end of this paper we also focused on the architecture of the database management system in a cloud

Index Terms- DBMS, Cloud Computing, Database Management system

I. INTRODUCTION

A cloud database management system (CDBMS) is a database management system that is accessed over the Internet and hosted by a third-party service provider on a remote server. DBMS is simply software packages by which user can create, use or maintain a database. Advancement of network technology results in decreasing of cost of transmitting a terabyte of data. According to the related researches, year 2013 is considered as the year of the CDBMS, thus many companies that offers cloud platforms are increasing their database service offers and becoming more active in market. Nowadays, there are many companies that provide DBMS as a cloud service such as: Microsoft Azure, Google, Amazon EC2, Mongo Lab etc. These companies offer cloud services in three different models: Virtual Machine (VM) image, Database as a service (DBaaS), Managed Hosting.

The first way is as a virtual machine image in which the cloud provider sells VM instances by which a DBMS can run. Infrastructure that supports VM is a responsibility of provider and uploading or purchasing of DBMS is responsibility of customer, making sure the DBMS is maintained properly.

In the second model, supplying and maintaining the DBMS is responsibility of cloud provider and the customer is

responsible for managing the databases supported by DBMS and paying for storage and resources.

In the third model, the three phases of database implementation installs, maintains and manages is done by the cloud provider.

These services are much more appropriate to the end-users and services become cheaper compared to other services. In this paper, we describe the architectures, deployment models and characteristics of cloud DBMS. We also highlighted the reasons why we use DBMS as cloud service. At the end, we describe architecture of DBMS in cloud and give some of its advantages.

II. DBMS AS A CLOUD SERVICE

Since the introduction of cloud computing, DBMS has changed into a whole new type of service with its own different benefits and advantages. The DBMS has been around since the beginning of commercial computing (1960s). DBMS are one of the oldest method of computing, essentially making it possible to scan, retrieve and organize data on hard drives and networks. All DBMS, despite whether traditional or cloud-based, are important communicators that works as interface between the operating system and the database.

For one thing, cloud-based DBMS are extremely measurable. They are able to handle amount of data and processes that would drain a typical DBMS. In spite their measurability however, cloud DBMS are still somehow lacks to scale up to extremely large processes; this is expected to be satisfied in the coming months and years however. Nowadays, the cloud DBMS's are ideally used in the testing and development of new cloud services and processes. DBMS as a cloud service pursue to capitalize on the disproportion between outdated DBMS models and their absence of full cloud functionality.

Cloud DBMS may utilize the new strategies which combines more than one elements or components like combining data structures or data query languages. Despite the features of cloud DBMS our society still have anxiety about them due to

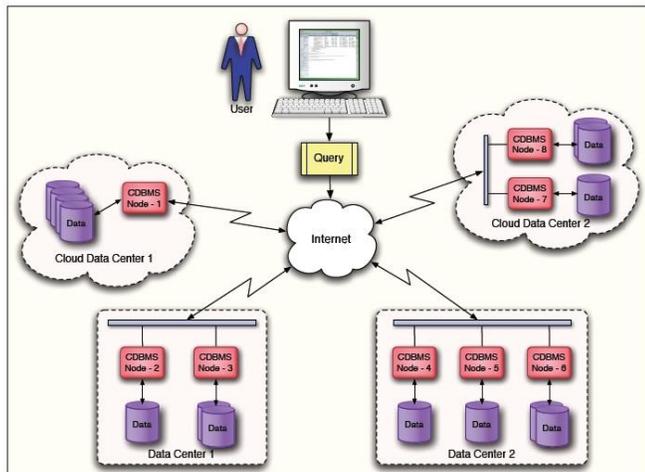
the various security issues that are not solved yet. These security issues came from the fact that cloud DBMS runs on the multiple hardware and servers. DBMS has a very serious security issue when there are multiple machines accessing database via number of applications without being noticed. In this situation a mischievous person could access our appropriate data according to their use and can cause serious harm to the database, putting the entire integral structure of database in danger.

For dealing with this type of problem, a method is introduced which involves setting up a system that analyze and record all activities regarding suspicious database access and defends from malicious attack by the unwanted user.

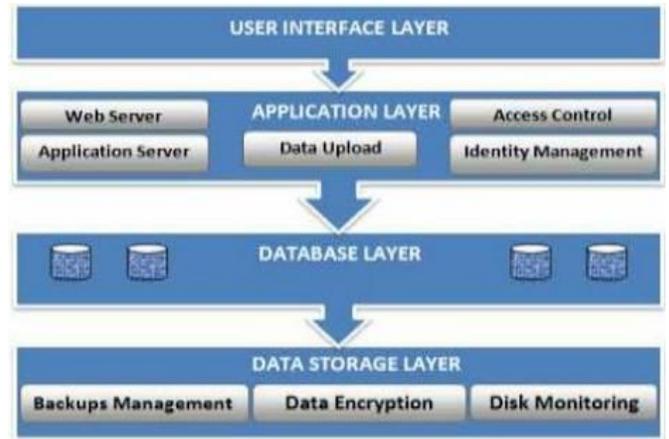
III. WHY DBMS IN CLOUD?

Database Management System as a cloud service developed to use as a wide service available on cloud infrastructure. These DBMS are available as a cloud services but sometimes are not necessarily relational. For example Microsoft’s SQL services, Google Big table are some of not relational DBMS, while Microsoft’s SQL Azure is a fully relational one. Those DBMS engines that runs on a cloud infrastructure are not specifically made to take the advantages of that cloud. This is the reason why “DBMS in a cloud” is changed to “DBMS as a cloud” which does not define DBMS as a cloud service.

The fully relational DBMS , Microsoft’s SQL Azure started proving its full production in early 2012 but still has some size limitations which are now reduced.



IV. DBMS IN CLOUD ARCHITECTURE



Above figure represents the architecture of DBMS in cloud, where first layer signifies data storage area which includes various functions such as Backups Management, data encryption and Disk Monitoring. The layer above it is Database layer, followed by application layer. Application layer consist Web Server, Application Server, Data Upload, Access Control and Identity Management which provide systematic data access with a better spreading of values, in terms of performance. It frequently stores the SQL statements in memory and avoids the recompilation at run which is very time consuming. It produces a detailed report by which we can easily access the data and allows you to enhance the performance of data. When data is stored or backed up, it automatically gets encrypted without any need of programming to encrypt.

V. CONCLUSION

By the above paper we can conclude that cloud can be used as a distributed database for handling huge amount of data. This leads to the enhancement of scalability, elasticity, availability, reliability and all of such capabilities as compared to the dedicated infrastructure at low cost. DBMS based on cloud services helps vendors to create a less expensive platform for development. In this paper, we present the idea of how DBMS can be used as a cloud service and we also proposed the architecture of cloud on Database Management System.

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