



# STORAGE OF DATABASE ON CLOUD WITH SECURITY ISSUES

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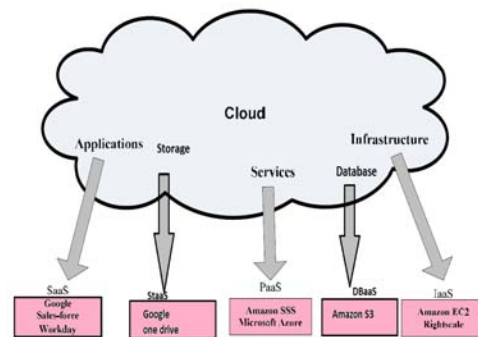
**Abstract—** The term ‘cloud’ technically represent the storage of various kind of data and nowadays it’s just like a cynosure in technical and academics community. This survey paper basically focused on information about storage of databases on cloud which will surely help the owners of maser’s organization to access databases from their places and cloud also provides various services to them like SAAS, PAAS, IAAS, STAAS, and DBAAS. The second aspect of this paper is the incorporation of security on databases which stored on a cloud; security is a primary concern for databases and cloud provider need confidentiality for storing data in databases.

**Index Terms—**Saas, Paas, Iaas, Staas, Dbaas, TPA.

## I. INTRODUCTION

Clouds are basically defined as the storage in the computers that are networked anywhere in the world. Its usage attracts the users most because it provides the various facilities and **anywhere, anytime access** of cloud is also a good feature it means that it has ubiquitous network access. [1] On the other hand, it also provides the facility of **on demand self-services** it means that whenever user demand for the resources, they can get it. **Pay-per-usage** is also one of the facilities of the cloud means you have to pay only for those resources which you have taken on rent. **Location independent resource pooling** means there is no need to be system specific for the storage of data on the cloud.

## II. SERVICES OF CLOUD



*Various services provided by cloud are:*

**1.Saas-** ‘software as a service’ [2], helped users to take advantage of software and also it eliminates the need to install and run software on their own system. Various vendors provide software on rent by using middleware, o/s, virtualization, server, storage, and networking. ‘Google apps’ is one of the examples of Saas services.

**2.Paas-** ‘platform as a service’ [3] helped users to take various platforms on rent, it's quite advantageous for quick deployment of application simple and cost effective also there is no need to buy layers of hardware and software. Basically, internet browser will be used for developing the applications (Google chrome, Mozilla Firefox). ‘Force.com’ is an example of Paas services.

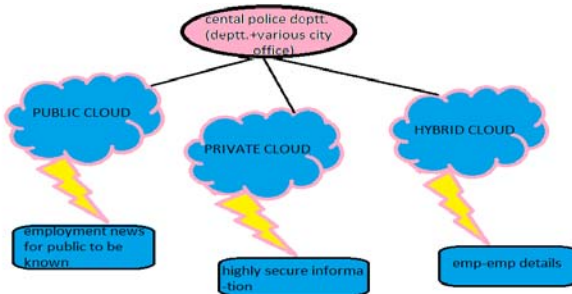
**3.Iaas-** ‘infrastructure as a service’, [3] to minimize the cost of buying infrastructure. It's good to take network information on a rental basis. Users take advantage as infrastructure on top which they can install any required platforms. Amazon ec2, rack space, windows

azure, Google compute engine are an example of IaaS services.

**4.Staas-** 'storage as a service' [4] provides a facility for user takes servers on rent. To physically buy servers is quite an expensive task it's good to take servers on rent and pay only for the certain time we used them. 'Amazon s3' is an example of Staas.

**5.Dbaas-** 'database as a service' [4] helped the users to give databases on demand for the users so that it can be accessed via the internet from the cloud database service provider. 'oracle exadata' is the example of Dbaas services.

### III. DEPLOYMENT MODEL OF CLOUD



There are various deployment models of cloud to understand their usage, Let us consider an example of 'Central police department' (CPD). It can issue different kind of information according to its value. Suppose if CPD want to issue a notice for employment, they can put such information on public cloud because, there is no need to incorporate much security for such kind of information and also this notice must be accessible by every user, so public cloud used when data is not much important or it must be accessible by public and also it costs less. Next scenario is for private cloud it used when CPD wants to store very confidential information like list of wanted criminals. The security of such kind of data is very important also it costs high. The hybrid cloud is used when CPD wants to issue a notice only for those people who worked in their department means that information can only be accessed by some authorized users. In others words we can say that it's a combination of private cloud and public cloud.

### IV. DATABASES ON CLOUD

The storage of databases on cloud is generally used for storing a large amount of data. The main functionality of database is that it must be 24X7 available for their user.

So to merge such property of database with cloud is important aspect here. The usage of database with the cloud is beneficial because it is easy to manage and also reduces cost. At the time of disaster or failure, it is easy to recover information or data from the database.

The concept of nodes [5] is used for managing the database. Several nodes are collectively worked across cloud and used for query services. It will help to mine the data from different geological location and corporate data centers .

#### A. ROLE OF NODES FOR MANAGING DATABASE

Nodes are playing a major role for managing the database on a cloud. To understand the role of nodes, Let us consider an example of BIA i.e. 'Business Intelligence Application'. It's a database used for storing a large amount of data for their users. The cloud database can be accessed from several ways, (Here we consider the source is a personal computer), there are several nodes, some nodes are data centers and some are users. Here internet worked as the line which establishes a connection between both. Above example shows that there is peer-to-peer communications are used between nodes .

#### B. PROCESS OF DATA STORAGE ON CLOUD DATABASE

Once a query is fired from the user, it is received by the nodes. Now the first node which has received the query tries to find out the type of query.

Next step is to transfer that query on that specific node, which solved that query.

If that node does not have the result for that query then, it consults to that node which have the result regarding that query. When a result is calculated it will send directly to the user without any disturbance of other nodes.

### V. SOME OBSTRUCTIONS AND THREATS IN CLOUD

#### A. PRIVACY AND SECURITY

The data stored by the user in the cloud is confidential and needs to be secured. Data residing in the cloud must be more secured then the personal computer. Many cloud companies ensures the high-level security of data, but if we observe the current scenario, more than half a dozen security breach occurred last year.

**B. PERFORMANCE, LATENCY AND RELIABILITY**

Latency includes encryption and decryption of data and has also been an issue with data flow across different cloud, Network congestion leads to latency when traffic flow is comparatively high. Performance should also be taken into account. Performance and latency both the factors are combines responsible for reliability.

**C. PLATFORM OR LANGUAGE SPECIFICITY**

Cloud must not be restricted to a single platform language. It must provide support to any user-friendly and indivisible usable language and must run on any platforms which are generally used by the user.

**D. DATA BREACH THROUGH FIBER OPTICS**

Fiber optics is the source of data transfer from one cloud to another and data which is being transferred is known as 'transitioning data' [6]. Nowadays some devices are used which can hack the data without causing the obstruction in its flow and the security of transitioning data is breached.

**VI. POSSIBLE ATTACKS ON THE DATABASE OF CLOUD****A. SQL INJECTION**

Inject refers to the 'addition', it can be described as the malicious SQL code [11] is injected to standard SQL code due to which unauthorized person become able to get unauthorized access over the database stored in the cloud.

**B. CROSS SITE SCRIPTING (XSS)**

Malicious script is inserted into the actual web context, [12] which helped the attacker to gain the confidential information of the victim. Mostly these types of attack are performed on dynamic websites.

**C. MAN IN THE MIDDLE ATTACK**

In such attack, an intruder or 'man in the middle' [13] tries to intrude between client and server to gain access of the data which is transferred between them and both client and server are unaware of it.

**D. DENIAL OF SERVICE (DOS) ATTACK**

In such kind of attack, the attacker floods the server with a large number of false request and

makes the server unable to meet the actual request made by an authorized user.

**C. COOKIE POISONING**

Cookies are the main source of credentials information of authorized users and attacker modify the content of cookies to make unauthorized access and try to gain credentials and used for their own benefit.

**VII. APPROACHES TO MAKE DATA SECURE****A. THIRD PARTY AUDITING (TPA)**

Rakhi Bhardwaj [7] proposed the idea of 'TPA' i.e. known as third-party auditing. It supports the auditing of dynamic data and user can retrieve the data anytime, anywhere. It will also help to maintain the integrity of data. It usually worked between client and server and handles their data.

**B. REDUCES TRANSPARENCY OF DATA**

Gonglu Sree Devi [7] has presented the approach to reduce the transparency of stored data in the cloud. She proposed that "rather than encrypting whole data, encrypting only some bits of data and encrypting bits will be treated as token".

**VIII. CONCLUSION**

This survey paper basically enlightened some points on the storage of databases on cloud and some problems regarding the security of databases on cloud and the possible solutions for such problems.

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