AN OVERVIEW OF CLOUD COMPUTING

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Abstract : Cloud computing is a recent technology that uses the Internet, central servers to organize the data and applications, which the user can access. Cloud computing allows individual users and other business peoples to use application without the necessity to install in their computer. They can access their files, which is located in other computer using Internet. This technology allows for more inefficient computing by centralizing storage, processing memory, and bandwidth. Cloud computing comes in three categories such as Software as a Service (SaaS), Infrastructure as a service (IaaS), Platform as a Service (PaaS).The SaaS provides application software which the user can use .Many industries, such as banking, healthcare and education are moving towards the cloud due to the efficiency of services provided by the pay-per-use pattern based on the resources such as processing power used, transactions carried out, bandwidth consumed, data transferred, or storage space occupied etc. Cloud computing is a completely internet dependent technology where client data is stored and maintain in the data center of a cloud provider like Google, Amazon, Salesforce.som and Microsoft etc. Limited control over the data may incur various security issues and threats which include data leakage, insecure interface, sharing of resources, data availability and inside attacks.

IndexTerms- Cloud computing, data and applications**.**
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I. INTRODUCTION

Cloud computing is a new computing model which is widely emerging technology in the recent years is adopted by most of the IT companies and other organizations. Cloud computing comes into focus only when we think about what IT has always wanted - away to increase capacity or add different capabilities to the current setting on the fly without investing in new infrastructure, training new personnel or licensing new software. Here 'on the fly' and 'without investing or training' becomes the keywords in the current situation. But cloud computing offers a better solution. Cloud Computing is an emerging trend to deploy and maintain software and is being adopted by the industry such as Google, IBM, Microsoft, and Amazon. Several prototype applications and platforms, such as the IBM ―Blue Cloud infrastructure, the Google App Engine, the Amazon Cloud, and the Elastic Computing Platform . Cloud Computing is perceived as the next progression that will impact organizational businesses and how they manage their IT infrastructures. The technology and architecture that cloud service and deployment models offer are a key area of research. Even though there are numerous variations on the definition of Cloud Computing, some basic principles characterize this emerging computing paradigm. Cloud Computing provides technological capabilities—generally maintained off premises— that are delivered on demand as a service via the Internet. Given that a third party owns and manages public cloud services, consumers of these services do not possess resources in the cloud model but pay for them on a per-use basis. Thus virtualization of the resources is the key concept. In the real scenario, they are renting the physical infrastructure, platforms and applications within a shared architecture. Cloud offerings can vary from virtual infrastructure, computing platforms, centralized data centres to end-user Web-Services and Web applications to enormous other focused computing services. Cloud Computing may be applied to solve problems in many domains of Information Technology like GIS (Geographical Information Systems), Scientific Research, e-Governance Systems , Decision Support Systems, ERP , Web Application Development , Mobile Technology etc

II Need for Cloud Computing

The cloud computing works on the cloud - so there are large groups of often low-cost servers with specialized connections to spread the data-processing chores among them. Since there are a lot of low-cost servers connected together, there are large pools of resources available. So these offer almost unlimited computing resources. This makes the availability of resources a lesser issue. The data of the application can also be stored in the cloud. Storage of data in the cloud has many distinct advantages over other storages. One thing is that data is spread evenly through the cloud in such a way that there are multiple copies of the data and there are ways by which failure can be detected and the data can be rebalanced on the fly. The I/O operations become simpler in the cloud such that browsing and searching for something in 25GB or more of data becomes simpler in the cloud, which is nearly impossible to do on a desktop. The cloud computing applications also provide automatic reconfiguration of the resources based on the service level agreements. When we are using applications out of the cloud, to scale the application with respect to the load is a mundane task because the resources have to be gathered and then provided to the users. If the load on the application is such that it is present only for a small amount of time as compared to the time its working out of the load, but occurs frequently, then scaling of the resources becomes tedious. But when the application is in the cloud, the load can be managed by spreading it to other available nodes by making a copy of the application on to them. This can be reverted once the load goes down. It can be done as and when needed. All these are done automatically such that the resources maintain and manage themselves.

Users

The most important Cloud entity, and the principal quality driver and constraining influence are, of course, the user. The value of solutions depends very much on the view it has of its end-user requirements and user categories. There four broad sets of nonexclusive user categories: System or Cyber infrastructure (CI) developers, developers (authors) of different component services and underlying applications, technology and domain personnel that integrates basic services into composite services and their orchestrations (workflows) and delivers those to end-users, and finally users of simple and composite services. User categories also include domain specific groups, and indirect users such as stakeholders, policy makers, and so on. Functional and usability requirements derive, in most part, directly from the user profiles.

III Possible services related to cloud

Cloud computing applications for functions such as:
- network strategy
- inventory management
- warehousing
- transportation

Next cloud computing applications for processes such as:
- global trade compliance
- replenishment planning
- order processing
- transportation load building
- fleet management
- transportation route planning

IV Cloud Key Security Challenges

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There are some clouds key Security challenges are:

- **Authentication**: Throughout the internet data stored by cloud user is available to all unauthorized people. Henceforth the certified user and assistance cloud must have interchangeability administration entity.

- **Access Control**: To check and promote only legalized users, cloud must have right access control policies. Such services must be adjustable, well planned, and their allocation is overseeing conveniently. The approach governor provision must be integrated on the basis of Service Level Agreement (SLA).
- **Policy Integration**: There are many cloud providers such as Amazon, Google which are accessed by end users. Minimum number of conflicts between their policies because they user their own policies and approaches. Service Management: In this different cloud providers such as Amazon, Google, comprise together to build a new composed services to meet their customers need. At this stage there should be procure divider to get the easiest localized services.
- **Trust Management:** The trust management approach must be developed as cloud environment is service provider and it should include trust negotiation factor between both parties such as user and provider. For example, to release their services provider must have little bit trust on user and users have same trust on provider.

V Security Issues

Cloud computing can provide different services like as a Platform as a service (PaaS), Software as a service (SaaS), Infrastructure as a service (IaaS) so that, security of corporate data in the cloud is difficult, Each service has their own security issues.

5.1 Data Security: Data Security refers as a confidentiality, integrity and availability. These are the major issues for cloud vendors. Confidentiality is defined as a privacy of the user data in the cloud system. Confidentiality are designed to prevent the sensitive information from unauthorized or wrong people. In this stores the encryption key data from enterprise C, stored at encrypted format in enterprise D. that data must be secure from the employees of enterprise D. Integrity is defined as the correctness of data, there is no common policies exist for approved data exchanges. Data are not lost or modified by unauthorized users.

Availability is defined as data is available on time, any place as user requires. As its web native As its web-native nature, cloud computing system enables its users to access the system (e.g., applications, services) from anywhere. This is true for all the cloud computing systems (e.g., DaaS, SaaS, PaaS, IaaS, and etc.).

5.2 Regulatory Complaince: Customers are eventually accountable when the security and completeness of their own data is taken by a service provider. Traditional service providers more prone to outsource surveys and security certification. Cloud computing providers reject to endure the scrutiny as signaling so these customers can only make usage of paltry operations .

5.3 Data Locations: When users use, they probably won't know exactly where their data will hosted and which location it will stored in. In fact, they might not even know what country it will be stored in. Service providers need to be asked whether they will accomplish to storing and alter data in particular.

5.4 Trust Issue: Trust is also a major issue in cloud computing. Trust can be in between human to machine, machine to human, human to human, machine to human. Trust is revolving around assurance and confidence. In cloud computing, user stores their data on cloud storage because of trust on cloud. For example people use Gmail server, Yahoo server because they trust on provider.

5.5 Data Recovery: It is defined as the process of restoring data that has been lost, corrupted or accident.The cloud solution as of now allows organization to use IaaS, PaaS, SaaS. There are various models of creating test data and moving it to the cloud. Data masking becomes the part of these processes in SDLC as the development environments.

VI Data Masking Techniques

6.1 Substitution: Substitution technique is the most effective method of applying data masking and able to preserve the authentic look of the data records. This technique consists of randomly replacing the contents of a column of data with information that looks similar but is completely unrelated to the real details. For example, the surnames in a customer database could be sanitized by replacing the real last names with surnames drawn from a largish random list. Substitution data can sometimes be very hard to find in large length - however any data masking software should contain datasets of commonly required items. For example, to sanitize surnames by substitution, a list of random last names must be available. Then to sanitize telephone one numbers, a list of phone numbers must be available. The substitution method need to be applied for many of the fields in DB structure such as telephone numbers, zip codes, credit card numbers and other card type numbers like Social Security numbers .

6.2 Shuffling : Shuffling is similar to substitution except that the substitution data is derived from the column itself. In simple terms the data is randomly shuffled with the column. Shuffling is effective for small amounts of data. Another consideration is the algorithm used to shuffle the data. If the shuffling method can be determined, then the data can be easily Unshuffled. For example, if the shuffle algorithm simply ran down the table swapping the column data in between every group of two rows it would not take much work from an interested party to revert things to their unshuffled state. Shuffling is rarely effective when used on small amounts of data. For example, if there are only 5 rows in a table it probably will not be too difficult to figure out which of the shuffled data really belongs to which row. On the other hand, if a column of numeric data is shuffled, the sum and average of the column still work out to the same amount. It is sometimes useful.

6.3 Encryption: Encryption is one of the most complex methods to solve the data masking problem. The Encryption technique algorithmically mix-up the data. This usually does not leave the data looking realistic and can sometimes make the data larger. Encryption also destroys the formatting and look and feel of the data. Encrypted data rarely looks meaningful; in fact, it usually looks like binary data. This sometimes leads to character set issues when manipulating encrypted varchar fields. Certain types of encryption impose constraints on the data format as well. This means that the fields must be extended with a suitable padding character which must then be stripped off at decryption time.

VII CONCLUSION:

Cloud computing is a powerful new abstraction for large scale data processing systems which is scalable, reliable and available. In cloud computing, there are large self-managed server pools available which reduces the overhead and eliminates management headache. Cloud computing services can also grow and shrink according to need.Generally most organization needs combination of dynamic and static database masking. In this paper we discussed about the cloud services models, deployment models and security in cloud by using data masking techniques. Storage of data on the cloud refines the way we manage the storage of data and access the data from the cloud. In this paper it is also mentioned about the various cryptography algorithms which help us to encrypting the data at sender side and then transferring it to the receiver side. This paper also explores the need of data masking in present information. Data masking will enable us to accomplish the following: (a) Increase protection against data theft. (b) Enforces 'need to access'. (c) Provides realistic data for testing, development and data sharing. (d)Provides a heightened sense of security to clients, employee and supplier.