Cloud Computing- Technical Review

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Abstract—---**This document reviews the definition of cloud computing, describes cloud computing open issues and benefits, presents an analysis of major classes of cloud technology, and provides recommendations and guidelines on how organizations should consider the risks and relative opportunities of cloud computing. Cloud computing has been a subject of the great deal of commentary. Attempts to describe cloud computing in general terms have been problematic as cloud computing is not a single kind of system, but instead spans a spectrum of underlying techniques, configuration possibilities, service models, and deployment models. This document describe cloud systems and discusses their architecture and models**.

Keyword: **Cloud Environment, Grid**

I. INTRODUCTION

Cloud computing allows users to easily rent access to fully featured applications, to deploymentenvironments and software development, and to computing infrastructure assets such as processing and network-accessible data storage. Cloud computing to put it simply means Internet Computing, Internet is usually visualized as clouds, hence the term cloud computing for computation has done through the Internet. Cloud Computing users can easily access database resources through the Internet from anywhere in the world, according to their needs, without worrying about any management or maintenance of actual resources.Hence, databases in cloud are very scalable and dynamic. Cloud computing is unlike utility computing, grid computing, or autonomic computing. In fact, it is a very independent platform in terms of computing. An example of cloud computing is Google Apps where any application can be accessed using a browser and it can be applied on thousands of computer through the Internet. Cloud computing provides the right to access common infrastructure and shared resources, giving services on demand over the network to perform operations that can meet changing business needs. The location of devices being accessed and physical resources are typically not known to the end user. It provides facilities for users to develop and manage their applications on the cloud, which involve virtualization of resources that manages and maintains itself.

II. CLOUD COMPUTING ARCHITECTURE

Cloud computing architecture is just like any other system, it is categorized into two main sections that are Front End and Back End. Front End can be any client or end user or any application (i.e. web browser) which is using cloud services. Back End is a network of serverswith data storage system and computer program. It is assumed that cloud contains infinite storage capacity for any software available in the market. Cloud has different applications that are hosted on their own dedicated server farms.

Cloud has centralized server administration system. Centralized server administers the system, balances client supply, monitors traffic, adjusts demands, and avoids congestion. This server follows protocols, usually known as middleware. Middleware controls the communication of cloud network.

Cloud Architecture follows a very important assumption, which is always true. The assumption is that the demand for resources is not always consistent from client to cloud. Because of this the servers of cloud are not able to run at their full capacity. To avoid this, server virtualization technique is applied. In this technique, all physical servers are virtualized and they run multiple servers with same or different application. As only one physical server acts as multiple physical servers, it increases the need for more physical machines. As, data is the most important part of cloud computing, so, data security is the top most priority in all the data operations of cloud. Here, all the data are backed up at multiple locations. This increases the data storage to multiple times in cloud compared with a regular system. Redundancy of data is crucial, which is a must-have attribute of cloud computing.

III. DEPLOYMENT MODELS

A cloud computing system may be hosted or deployed privatelyon the site of cloud customer, it can be shared among a limited number of trusted partners, can be hosted by any other party, or can be a publically accessible service that is a public cloud. Depending upon the kind of cloud deployment, or may have access to large quantities of remotely accessed resources, the cloud may also have restricted private computing resources. These models present a number of deals in how customers can control their resources, and the cost, scale and availability of resources.

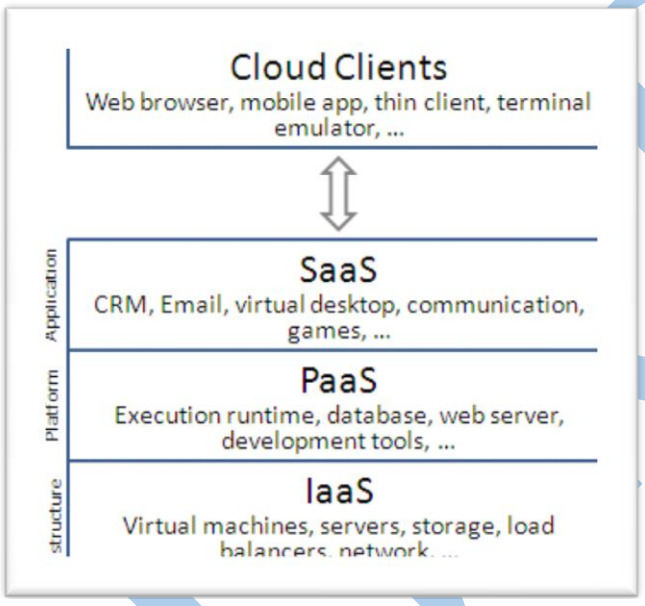
IV. SERVICE MODELS

A cloud can provide access to software applications such as office productivity tools and email (the SaaS or Software as a Servicemodel), or can provide a tool for customers to use to operate and buildtheir own software (the Platform as a Service, or PaaS, service model), or can provide network access to computing resources such as processing power and storage (the Infrastructure as a Service, or IaaS, service model). Different service models have different strengths and are suitable for different customers and business segments.Interoperability and portability of customer workloads is more achievable in the IaaS service model because the building blocks of IaaS offerings are relatively

well-defined, for e.g. CPU instruction sets, network protocols and legacy device interfaces..

V. ECONOMIC CONSIDERATIONS

In public deployment and outsourced models, cloud computing provides appropriate rental of computing resources, users pay charges for services while using a service but need not to pay large up front acquisition costs to build up a computing infrastructure. The reduction of costs reduces the risk ofexperimental efforts and pilot projects, thus reducing a barrier to organizational agility or flexibility. In outsourced public deployment and models, cloud computing also can provideelasticity, i.e. the ability for customers to request and receive, and after that release as many resources as required. By using a cloud, customers may be able to avoid excessive costs from over-provisioning that is building capacity for higher demands and then not using the capacity in non-peak periods. Cloud computing reduces overall costs for an organization depends on a careful analysis of all the costs of compliance, operation, and security, including costs to migrate, if required, migrate it from the cloud.



VI. OPERATIONAL CHARACTERISTICS

Cloud computing assists applications that can be ruptured up into compact independent parts. Cloud systems mainly depend upon networking and hence any imperfection on networking, such as service disruptions, data import/export bottlenecks or reduce cloud utility, mainly for those applications which are not tolerant of disruptions.

VII. SECURITY

Organizations should be aware of security issues that do exist in cloud computing and are of applicable NIST publications. In complex networked systems, clouds are affected by computer and network security problems such as the needs to provide

- Data confidentiality.
- Data integrity.
- System availability.

By applying uniform management practices, clouds may be improve on some response issues and security update. Clouds also have capacity to clump an unprecedented quantity and a lot of customer data in cloud data centers. This potential requires a high degree of transparency and confidence that cloud providers can keep customer data separate and protected. Also, cloud users trust heavily on Web browsers, so browser security failures can lead to cloud security violation. The privacy and security of cloud computing depends primarily on whether the cloud service provider has implemented sound privacy policy and security controls desired by the customers, the visibility that customers have into its performance, and how perfectly it is managed. The move to cloud computing was the business decision in which the business case should consider the relevant factors some of which include readiness of existing applications for cloud deployment, transition cost, life-cycle cost, maturity of service in existing infrastructure, and any other factors such as privacy requirements and security.

VIII. CONCLUSION

Cloud Computing is beginning of "network based computing" over Internet in force. It is a technology of many years and is the enabling element of two computing models which are totally new that are the Client-Cloud computing and the Terminal-Cloud computing. These two new models will create a new generation of applications and business. Our future work would be to make ita beginning to the end of dominance of desktop computing such as that with the Windows. It is also a beginning ofInternet based services economy: the Internet centric, Web based, on demand, Cloud applications and computing economy.

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