Research Proposal For Cloud Computing

Abstract

Cloud computing is a contemporary buzzword which have changes the face and soul of IT industry in a way that the companies can interact over the internet. The realm of cloud computing includes a range of services of scalability, reliability, high performance and low cost. The most contemporary services in the industry are formed by blending service oriented architecture and hardware components of data centers. It is the sole catalyst for adding onto the technical, business and strategic value to enterprises for innovative solutions and services. Cloud computing is an interesting field with a conglomerate of technologies, theories, concepts (Armando, 2011) etc. Cloud computing includes public, private and hybrid clouds where public cloud is based over pay per use basis, private clouds having personally designed application over internal infrastructure, and hybrid being a collaboration of both the concepts.

Introduction

Cloud computing is an ubiquitous and on demand service for networking to provide a configurable shared pool of services and resources like services, storage, applications, infrastructure etc. It forms a part of Software as a Service (SaaS) with blend of software and hardware. It is a combination of Utility Computing and SaaS. It is a utility metaphor for cloud computing which is service and consumer oriented.

The scope of the study is to have an insight into the theories and concepts of cloud computing by dwelling deeper into the present literature with adequate research and sufficient study. The study will ponder over the frameworks and platforms of cloud computing. There will be a scope analysis for pros and cons of all the types and services of the cloud computing. The scope of the study also focuses over the security issues that are prevailing in the industry with some upcoming problems that may occur in adoption of cloud services. With the present scope of the study, there is a huge business scope in addition to technological scope for future. There might be more number of available applications in the upcoming years and an enhanced growth for use of hybrid clouds. There can be future scope for innovative and creative services for cloud computing.

Literature review

The history of cloud computing can be traced back to the time sharing model along with virtual private networks. The evolution of cloud computing was preceded by grid computing, parallel computing, and utility computing. Cloud computing evolved as SaaS model modulating into an application domain for anytime, anywhere and anyhow easy access in a dynamic manner.

The fundamental models for cloud computing are Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS) and each one of them have various pros and cons with different functionalities. IaaS services from a large pool of data center comprises of networks, firewalls, storage, and computers. This model installs application softwares in the cloud for use in a virtual environment which is based over demand providing raw materials like networking, hardware or processors (Armbrust, 2010). There must be a control over deployed applications, operating system or storage leaving the consideration of underlying architecture. PaaS has a solution stack with features of database, web servers, programming language, execution environment etc. Users can create their own applications by the means of programming language or API libraries. PaaS model is a complete set of toolkit comprising of integration services, interface designing, and process logics. Every model for Enterprise Resource Planning or Customer Relationship Management is observed under SaaS having a multi-tenant architecture facilitating productivity and collaboration.

Cloud computing ease up the process of information sharing within an organization by providing softwares and licensed applications with just one installation over the cloud. The remote machines kept in the data centers fosters an efficient way of information storage and usage (Breiter, 2009). There is no need of overburdening the local computers which may be solved by running the interface software over the cloud computing platform. Server virtualization is utilized in cloud computing to minimize physical needs of servers and back end data centers. It is for the purpose of maximizing the output and running capacity of a processor.

There are many characteristics of cloud computing such as elasticity, dynamicity, flexibility, and many more. Horizontal and vertical scaling, reliability to ensure data security, quality of service elements like throughput, response time, agility and adaptability (Bristow,2010), reduced and

affordable cost, sustainable development, less energy consumption, and many more such beneficial features.

There are various technological issues in the domain of cloud computing focusing over evaluation and optimization. Some of the techniques in this field are allocated for dynamic resource allocation and its improvement to dwell out estimates and statistics for performance of cloud networks with some of the critical scenarios of load failure. Data management is another such technological category in which large scaled and distributed nature of clouds is considered. Software development for the utility of cloud computing deals with a stream of software enabled and developer-oriented research and strategies. Programming frameworks are also analyzed with the help of the tool MapReduce paying special attention over restructuring and automation (Buyya, 2009). Service management focuses over the lifecycle of the cloud, its deployment and publishing, selection of the services that will be provided by the cloud. Security and privacy issues of the cloud are major issues of concern for the public companies to invest their resources and capital in adoption of cloud computing.
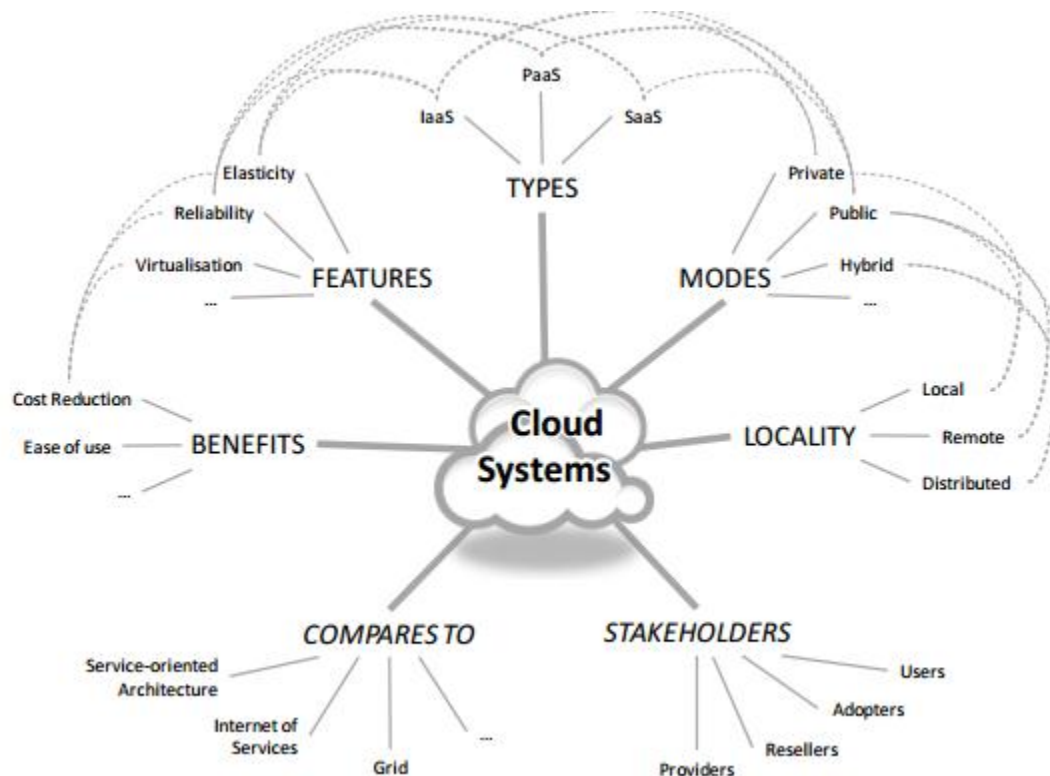

Figure 1: Cloud Computing Architecture (Hayes, 2008)

Business aspects of cloud computing are in relation with the utility, effectiveness, cost and other such factors related to cloud computing. Cost is a major factor affecting the frequency of cloud adoption. There are algorithms to determine the minimum operational costs for the strategy of storage in the cloud. Legal issues pertain to Deontologist, Utilitarian and Rawlsian aspect looking after ethics of usage of cloud (Cervone, 2010). The privacy issue comes up because of management by third party and due to degree of sensitivity attached with the information.

Cloud computing was regarded as the top ten revolutionary technologies in IT industry.
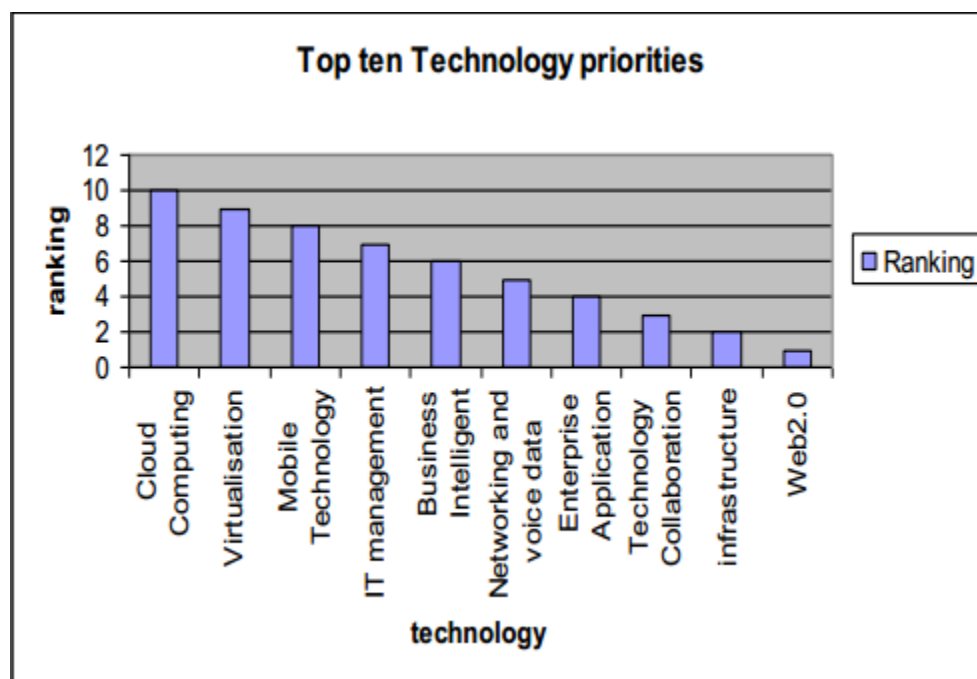

Figure 2. Priorities of Contemporary IT (Cervone, 2010)

There are various domains and dimensions attached with cloud computing such as vast computing power and association with eScience community, eGovernment system including electronic voting system, educational field including IT, online collaborative writing, operational management (Hayes, 2008), e learning, library resources etc., open source technology or the fields of mobile computing for semantic wen engines.

The issues with cloud computing are skeptical and controversial such as data confidentiality, availability of services, slow scaling, cost crunch, performance unpredictability, data lock in,

software bugs or virus etc. There is lack of active standardization for APIs and software licensing issues (Kritsonis, 2011) related with it too. It is difficult for a single operator to manage the data confidentially to avoid theft, misuse, illegal malfunctioning etc. Another prevailing threat and issue is of trans-border data flow and some data proliferation for various companies under a single cloud. It is difficult to trace any kind of duplicates or some backups stored for the critical information. Another issue is of lack of power or control over the lifecycle of data available over the cloud. In the models of IaaS and PaaS, virtual machines are used for data storage, uploading, processing or downloading and if at once media is wiped out, there is no surety or conformity that the upcoming user won't be able to access that data with the help of some innovative technology or hacking medium (Grobauer, 2011).

Figure 3. Pros and Cons of cloud computing (Grobauer, 2011)

Research methodology

The research methodology adopted by the study was qualitative to gain a better review about the views of businessmen and corporate managers in regard with the cloud computing so as to have a future review of the scope of the hot technology which is conquering the IT world.

In the qualitative study, the method of interview was adopted and various different people in this business world and results were collected for analyze the pattern of success or failure of this new cloud computing technology.

The strength of the qualitative analysis was a descriptive study presented in the light of cloud computing to help us gain views and perspectives of people connected directly or indirectly with the concept and technique of cloud computing. However, there is a weakness with simply qualitative analysis that it lacks quantitative study and analysis including statistics, charts, patterns and other numerical analysis.

The segmentation, targeting and positioning was used to prepare a complete, comprehensive and concise report about the cloud computing and its adoption among the people. The IT industry was targeted and segmentation was done based over the position and post of people in the industry. The basis of segmentation was the position of people in the industry who are in relation with the cloud computing and are using it is some form or the other. Targeting was done to select stakeholders of IT industry who are in close relation or are directly related with the concept and application of cloud computing.

Planning, Organization and Analysis

The study will follow a timeline starting from preparing a checklist for cloud computing and some interview questions prepared on a general basis. Interview questions and a format shall be made customized as per the participants of IT industry by gaining knowledge and information about the potential participants in the survey. The planning and organization of the proposed research for studying the scope and application of cloud computing. The organization of the collected results and patterns should be made to wisely to dwell deeper into the acceptance and use of cloud computing. The analysis of the study will help us to get a better understanding that how cloud computing can help a larger section of the society with the help of varied applications. The results showcased that cloud computing has become an integral and most sighted component in the industry of technology. Many business organizations and companies make special use of cloud computing for sharing information, making business decisions online and giving access to important information of the company to each and every employee via the means of cloud.

Conclusion

The undeniable and foreseeable benefits of cloud computing have made it as a new revolution in IT industry. The massive and huge developments in the field of cloud computing have made the cloud services affordable to business of any scale to share and store information. With a high

upsurge in the trend of adoption of cloud, there are various shortcomings or security issues related with the buzz field. To let cloud computing become a mature and self sustained technology in the field of IT, it is essentially important to overcome every barrier or challenge related with it and innovate for a more affordable, sharable and scalable cloud providing service.

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