

Cloud Computing Environment

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Abstract— Cloud computing is the development of parallel computing, distributed computing, grid computing and virtualization technologies which define the shape of a new era. Cloud computing is an emerging model of business computing. In this paper, we explore the concept of cloud architecture and compares cloud computing with grid computing. We also address the characteristics and applications of several popular cloud computing platforms. In this paper, we aim to pinpoint the challenges and issues of cloud computing. Academic has various departments and many semesters where lots of students need to access the computing a need for highly available up-to-date software and hardware is must. Cloud computing has the capacity of scaling and elasticity which is perfect for such an environment.

Keywords: Cloud Computing, Web Service, Virtualization, Grid Computing, Virtual Computing Lab, Architecture, Challenges, Cloud Platforms, Research Issues

I. INTRODUCTION

Cloud computing is a complete new technology. It is the development of parallel computing, distributed computing grid computing, and is the combination and evolution of Virtualization, Utility computing, Software-as-a-Service (SaaS), Infrastructure-as-a-Service (IaaS) and Platform-as-a-Service (PaaS). Cloud is a metaphor to describe web as a space where computing has been pre installed and exist as a service .Cloud computing growth has taken all the attention of various communities like researches, student, business, consumer and government organization. Big data is the main reason for coming of cloud computing in the show, everyday lots of data in the size of PETA bytes are uploaded in the digital world which required lots of storage and computing resources. An email client is similar to how cloud computing works.

- 1) A collection or a group of integrated and networked hardware, software and internet infrastructure (called a platform).
- 2) Using the internet for communication and transport provides hardware, software and networking services to clients, to general public, enterprises, corporations and businesses market.
- 3) Pay as-you- use. It’s elastic.
- 4) Scale up and down in capacity and functionalities



II. ARCHITECTURAL COMPONENTS

Cloud service models are commonly divided into SaaS, PaaS, and IaaS that exhibited by a given cloud infrastructure. It’s helpful to add more structure to the service model stacks: Fig. 1 shows a cloud reference architecture [13] that makes the most important security-relevant cloud components explicit and provides an abstract overview of cloud computing for security issue analysis.

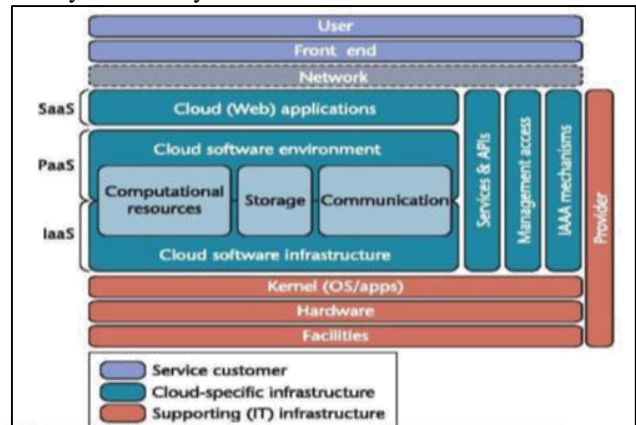


Fig. 1: The cloud reference architecture.

A. Benefits of Cloud Computing

- Reduced implementation and maintenance costs
- Increased mobility for a global workforce
- Flexible and scalable infrastructures
- Quick time to market
- IT department transformation (focus on innovation vs. Maintenance and implementation)
- “Greening” of the data center.
- Increased availability of high-performance applications to small/medium-sized businesses

B. Software as a Service (SaaS):

Cloud consumers release their applications in a hosting environment, which can be accessed through networks from various clients (e.g. Web browser, PDA, etc.) by application users. Cloud consumers do not have control over the cloud infrastructure that often employs multi-tenancy system architecture, namely, different cloud consumers' applications are organized in a single logical environment in the SaaS cloud to achieve economies of scale and optimization in terms of speed, security, availability, disaster recovery and maintenance.

III. RELATED WORKS

Invent of Internet changes the way we use of computer. From mail to shopping we all depend on this huge group of network computer. Cloud computing has entirely changes what the internet means. Powerful of desktop application is available on net and storage is available online wherever we go from any device. E-Learning and web 2.0 learning totally changes of education system.

IV. PURPOSE OF RESEARCH

Students' learning is no longer confined within the classroom in the era of e-learning 2.0. The environment of IT education could be improved to let student access learning resources anywhere. IGNOU (India Gandhi national Open University). Sometimes is slow: Also, with fast connections, sometimes you might experience delays since web-based applications can sometimes be slower than accessing a similar software program on your desktop PC. The reasons for that are because of the demanding upload and download bandwidth that web applications need. Your data is 100% in the cloud: All the data that you had until now on your local PC, it is stored in the cloud. Theoretically, data stored in the cloud is safe since a cloud hosting company uses several ways of backup in order ensure that, on any case the data will not be lost.

A. Cloud Computing

Definitions of cloud is defined by many expert, but the National Institute of Standards and Technology (NIST) definition is a generally accepted standard: "Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (such as networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction."

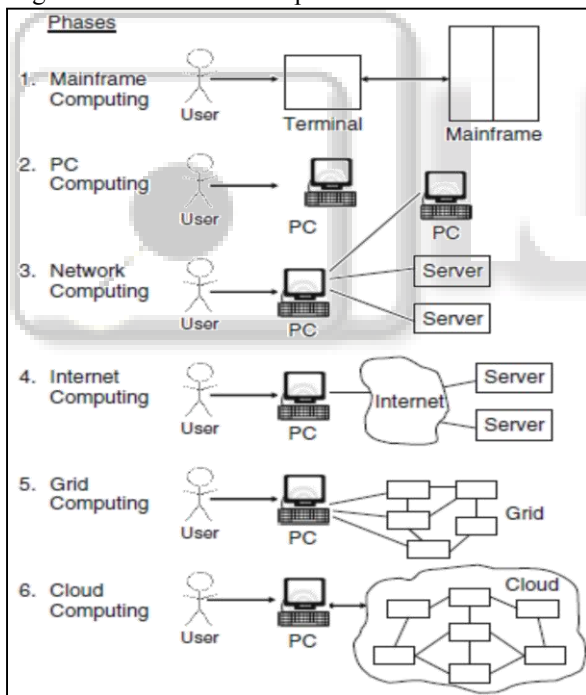
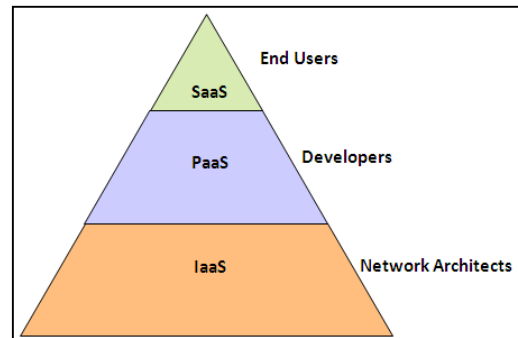


Fig. 2: Six computing paradigms

B. Web Serving

Moving web servers, management and analytic tools to the cloud is also at the top of the prioritized list, because this will reduce maintenance costs and reliance on subscription models as well as improve rapidness of deployment. Cloud Server is the key part of the computing platform to ensure its.



C. Data as a Service (DaaS)

The delivery of virtualized storage on demand becomes a separate Cloud service - data storage service. Notice that DaaS could be seen as a special type IaaS. The motivation is that on-premise enterprise database systems are often tied in a prohibitive upfront cost in dedicated server, software license, post-delivery services and in-house IT maintenance.

V. COMPARISON BETWEEN CLOUD AND GRID COMPUTING

A comparison can be summaries as follows:

- 1) Construction of the grid is to complete a specified task, such as biology grid, Geography grid, national educational grid, while Cloud computing is designed to meet general application and there are not grid for a special field.
- 2) Grid emphasizes the "resource sharing" to form a virtual organization. Cloud is often owned by a single physical organization (except the community Cloud, in this case, it is owned by the community), who allocates resources to different running instances.
- 3) Grid aims to provide the maximum computing capacity for a huge task through resource sharing. Cloud aims to suffice as many small-to-medium tasks as possible based on users' real-time requirement multi-tenancy is a very important concept for Cloud computing.

A. Advantages

Better performance: Due to the fact that no programs or files are loaded on the local PC, users will not experience delays when switching on/off their computers and also the internal network will be much faster since no internal traffic will occur. **Lower-cost computers for users:** This point is one of the financial advantages of cloud computing. There is no need to purchase powerful and expensive equipment to use cloud computing since all the processing is not at your local computer but in the cloud. Since the application runs in the cloud, not on the desktop PC.

B. Disadvantages

Internet connection is required: It is impossible to work if your Internet connection is down, since you are using Internet to connect to your "cloud PC". If there is no Internet connection, then no access.

VI. CONCLUSION

Cloud computing is a solution to many problem of computing. Even we are in IT ages complication of

computing has created much disaster to computer world. Lots of crisis has happen in business world as well as in academic environment. Data security, storage, processing power is limited while using traditional computing. Data are also in risk and not available all time. But by using of cloud computing the entire problem is solve. Cloud Computing initiatives could affect the enterprises within two to three years as it has the potential to significantly change IT.

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