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STUDENTS'
ECONOMIC FORUM

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Theme 251

CLOUD COMPUTING

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SOUTH INDIAN Bank
Experience Next Generation Banking

SIB STUDENTS' ECONOMIC FORUM

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Theme No. 251 :CLOUD COMPUTING

A well informed customer will make the policy makers as well as organisations which produce goods and services more responsive to the customer needs. This will also result in healthy competition among organisations and improve the quality of goods and services produced.

The "SIB Students' Economic Forum" is designed to kindle interest in economic affairs in the minds of our younger generation. We highlight one theme in every monthly meeting of the "Forum". This month, we discuss on "Cloud Computing" –a general term that involves delivering services over the internet. It is a model, delivering information technology services by retrieving resources from the internet through web-based tools rather than through a direct connection to a server.

How can we define Cloud Computing?

It is defined as a technology that uses the internet and central remote servers to maintain data and applications. Cloud Computing allows consumers and businesses to use applications without installation and access their personal files at any computer with internet access. This technology provides much more efficient computing by centralizing storage, memory, processing and bandwidth. It is a model for convenient on-demand access to a shared pool of configurable computing resources in the form of net works, servers, storage or applications that can be rapidly provisioned and released with minimal management effort or service provider interaction.

What are the benefits of Cloud Computing?

Cloud Computing is broken down into three segments: "Application" "Storage" and "Connectivity." Each segment serves a different purpose and offers different products for businesses and individuals around the world. In June 2011, a study conducted by "Version One" found that a large section of Finance and IT professionals do not know what Cloud Computing is, highlighting the young nature of the technology.

1. Cloud Computing helps the client to reduce hardware costs since there is no need to buy a fast /advanced hardware with high memory when the cloud computing system provides all these. Companies can also reduce investment in expensive software solutions and avoid buying a set of software or software licenses for every employee.

Cloud Computing System helps these companies to avail these services by paying a regular fee.

2. Servers and digital storage devices demand space for data storage. Companies even rent physical space to store devices and data base, when enough space is not available on site. Cloud Computing helps companies to store data more on another's site than using physical space on the front end.
3. The biggest advantage of Cloud Computing is that the applications or data can be accessed from anywhere and at any time. The cloud computing system will be available from any internet linked computer. In Cloud Computing, the consumer does not require software or a server for getting access to a particular service, but needs just an internet connection to enjoy the service. The server and software are all on the cloud (internet) and is totally managed by the cloud service provider. The consumer gets to use the software alone and enjoy the benefits. All the users or consumers get the benefits of cloud computing which means anything that involves delivering services over the internet.

Which are the cloud models?

1. A public cloud is one based on the standard cloud computing model, in which a service provider makes resources, such as applications and storage, available to the general public over the Internet. Public cloud services may be free or offered on a pay-per-usage model. The infrastructure is shared among organisations, without visibility over the location from where the services are provided. Generally in public cloud the infrastructure is hosted at the vendor's premises.
2. Private Cloud is the infrastructure operated solely for a single organization, whether managed internally or by a third-party and hosted internally or externally. Private cloud is expensive but considered to be more secure than the other models.
3. Community cloud shares infrastructure between several organizations from a specific community with common concerns (security, compliance, jurisdiction, etc.), whether managed internally or by a third-party and hosted internally or externally. The costs are spread over fewer users than a public cloud (but more than a private cloud), so only some of the benefits of cloud computing are realized.
4. Hybrid cloud is a composition of two or more clouds (private, community, or public) that remain unique entities but are bound together, offering the benefits of multiple deployment models. It can also be defined as multiple cloud systems that are connected in a way that allows programs and data to be moved easily from one deployment system to another.

How does the system work?

A client needs a laptop or desktop computer or any such similar device with a web browser to access the system through the internet. The service provider allots a password to the customer. The user can log into the cloud, which provides server based applications and

services to the user displayed in the laptop or computer. A customer who wants to create a document using the word processor can directly go to the cloud and use the software which is pre-installed there. The documents can be saved with all the changes and computations in the cloud server and stored permanently.

What does a shift towards Cloud Computing mean?

A paradigm shift to cloud computing will affect many different sub-categories in computer industry such as software companies, internet service providers (ISPs) and hardware manufacturers. The major internet based companies could gain from a shift to Cloud Computing. The speculators in stock markets and the search engine providers may benefit from cloud computing. Some of the healthcare providers have already embarked their solutions onto the clouds. The traditional software producers such as oracle could have some catching up to do if cloud computing ultimately wins out.

What are the findings of the Microsoft commissioned study?

The study conducted by IDC predicts that cloud computing will generate over two million jobs in India and nearly 14 million new jobs worldwide by 2015 , with more than 50% generated in the small and medium segments. The study estimates that revenues from cloud innovation could reach $1.1 trillion a year by 2015. IT cloud services have helped the business community around the world in generating more than $600 billion in revenue and 1.5 million new jobs. The study concludes that countries investing in key cloud infrastructure will experience greater job growth. With all of Microsoft's key products having a cloud offering, it is uniquely positioned to provide unmatched flexibility – from a complete on-premise solution to one completely in the cloud. India is uniquely poised to leverage this opportunity with factors such as an unparalleled ecosystem of developers, ISVs(Independent Software Vendors) and SI s (System Integrators) contributing to the growth of Cloud Computing. The latest research confirms India's opportunity to benefit from the cloud with the key factors favouring cloud-based job creation.

What are the key characteristics of Cloud Computing?

- Empowerment of end-users of computing resources by putting the provisioning of those resources in their own control, as opposed to the control of a centralized IT service.
- Application Programming Interface (API) accessibility to software that enables machines to interact with cloud software.
- In a public cloud delivery model, cost is reduced - capital expenditure is converted to revenue expenditure.
- Fewer IT skills are required for implementation.
- Device and location independence enable users to access systems using a web browser regardless of their location or what device they are using, a PC or mobile phone.
- Peak - load capacity increases and reliability is improved if multiple redundant sites

are used, which makes well-designed cloud computing suitable for business continuity and disaster recovery.

- Scalability and Elasticity via dynamic (on-demand) provisioning of resources on a fine-grained, self-service basis near real-time, without users having to engineer for peak loads.
- Performance is monitored and security could improve due to centralisation of data.
- Private cloud installations are in part motivated by users' desire to retain control over the infrastructure and avoid losing control of information security.
- Maintenance of Cloud Computing applications is easier, because they do not need to be installed on each user's computer.

What are the major concerns raised?

- The cloud model has been criticised on privacy concerns for the greater ease in which the companies hosting the cloud services control, thus, can monitor at will, lawfully or unlawfully, the communication and data stored between the user and the host company.
- Cloud Computing poses privacy concerns basically, because the service provider at any point in time, may access the data that is on the cloud. They could accidentally or deliberately alter or even delete some information.
- In order to obtain compliance with regulations, the users may have to adopt community or hybrid deployment modes that are typically more expensive and may offer restricted benefits.
- As can be expected with any revolutionary change in the landscape of global computing, certain legal issues arise; everything from trademark infringement, security concerns to the sharing of propriety data resources.
- Open source software has provided the foundation for many cloud computing implementations.
- As Cloud Computing is achieving increased popularity, concerns are being voiced about the security issues introduced through adoption of this new model.
- The effectiveness and efficiency of traditional protection mechanisms are being reconsidered as the characteristics of this innovative deployment model differ widely from those of traditional architectures.

Although Cloud Computing is often assumed to be a form of "Green Computing", there is as of yet no published study to substantiate this assumption. In areas where climate favours natural cooling and renewable electricity is readily available, the environmental effects will be more moderate. Thus countries with favourable conditions, such as Finland, Sweden and Switzerland, are trying to attract Cloud Computing data centres.

CLOUD COMPUTING: POTENTIAL

- **Microsoft Corporation sees India as the global hub for cloud computing.**
- **Companies all over the world will look to India to support their transition to cloud computing.**
- **The Cloud Computing market is expected to grow from $56bn now to more than $146bn by 2014.**
- **The Indian market is expected to reach from the present $110 million to $1084 million by 2015.**
- **As components of the overall cloud market, software-as-a service (SaaS) is likely to reach $650 million, while platform–as-a- service (PaaS) and infrastructure–as-a-service (IaaS) markets cumulatively would touch $434million by 2015.**

CLOUD CALL: The Business Software Alliance Survey:

The Rankings:

Country	Marks Scored
Japan	83.3%
USA	70.0%
Germany	70.0%
India	50.0%
China	47.5%
Brazil	35.1%

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