CLOUD COMPUTING: REVOLUTION OF THE INTERNET

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Abstract : **Cloud computing refers to applications and services that run on a distributed network using virtualized resources and accessed by Common Internet Protocols and networking standard. It is distinguished by the notion that recourses are virtual and limitless and that details of the physical systems on which software runs are abstracted from the user. Cloud computing takes the technology, services and applications that are similar to those on the Internet and turns them into a self-service utility.**

The cloud itself is set of hardware, networks, storage, services and interfaces that enable the delivery of computing as a service. Cloud services include the delivery of software, infrastructure and storage over the Internet based on user demand

The use of the word "Cloud" makes reference to the two essential concepts :

Abstraction : Cloud computing abstracts the details of system implementation from users and developers. Applications run on physical systems that aren't specified, data is stored at unknown location, administration of systems is outsourced to other, and access by user is ubiquitous.

Virtualization : Cloud computing virtualizes systems by pooling and sharing resources. Systems and storage can be provisioned as needed from a centralized infrastructure, costs are assessed on a metered basis, multi-tenancy is enabled and resources are scalable with agility.
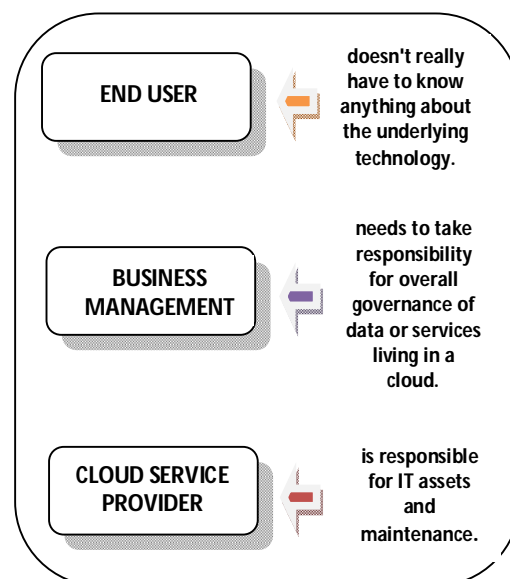
Basic characteristics of Cloud :

- ✓ Elasticity and the ability to scale up and down.

- ✓ Self-service provisioning and automatic de-provisioning.

- ✓ Application Programming Interface (API's).

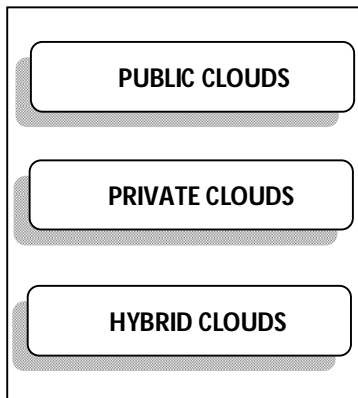- ✓ Billing and metering of service usage in a Pay-as-you-go model.
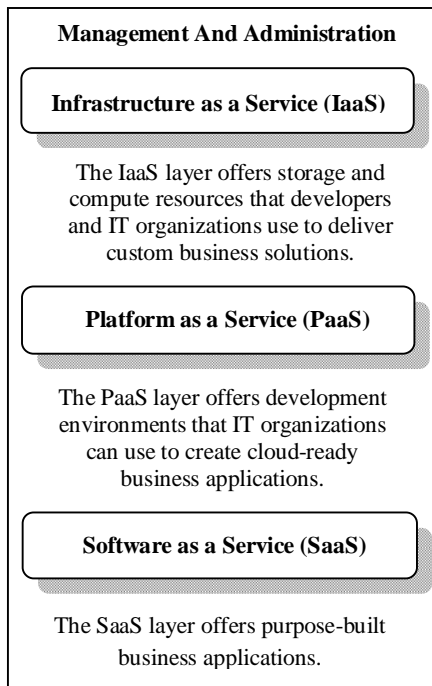
How Cloud Computing Works :
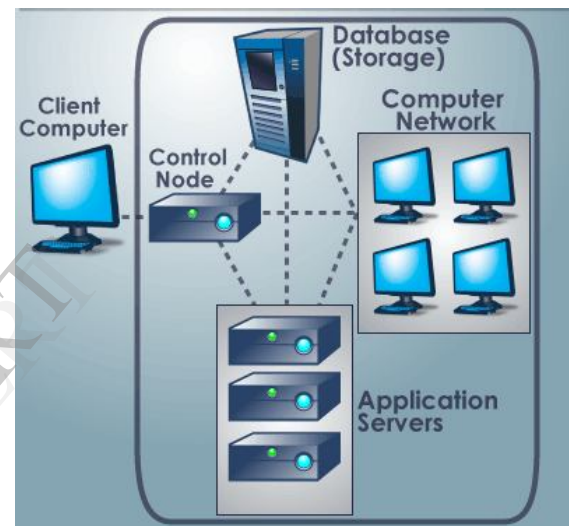
Participants in World of the Cloud :

Cloud Computing is Offered in different forms :

- PUBLIC CLOUDS
- PRIVATE CLOUDS
- HYBRID CLOUDS

Cloud Service delivery Models

Management And Administration

Infrastructure as a Service (IaaS)

The IaaS layer offers storage and compute resources that developers and IT organizations use to deliver custom business solutions.

Platform as a Service (PaaS)

The PaaS layer offers development environments that IT organizations can use to create cloud-ready business applications.

Software as a Service (SaaS)

The SaaS layer offers purpose-built business applications.

How Cloud computing has changed the nature of commercial system deployment -
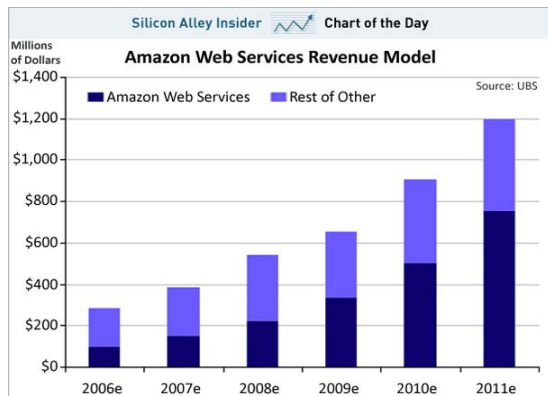
Example 1:

Google : In the last decade, Google has built a worldwide network of data centers to services its search engine. In doing so Google has captured a substantial portion of the world's advertising revenue. That revenue has enabled Google to offer free

software to users based on that infrastructure and has changed the market for user-facing software.

Google Apps	Google apps for individuals, groups and entrepreneurs	Google apps for business	Google apps for education
Messaging Apps *Gmail, Google Talk, Google Groups, Google + and Google Calendar*	✓	✓	✓
Collaboration Apps *Google Docs, Google Sites, Google Video for business and more.*	✓	✓	✓
More Google Apps *Google Reader, Blogger, Picasa Web Albums, Adwords and more.*	✓	✓	✓
Business Features *25GB email storage per user, BlackBerry and Microsoft Outlook interoperability and more.*		✓	✓
Business Security *SSO, Forced SSL, custom password strength requirements and more.*		✓	✓
Business support and reliability *99.9% uptime guarantee SLA and 24x7 support*		✓	✓

Example 2:

Amazon Web Services : One of the most successful cloud based business is Amazon Web Services which is an infrastructure as a Service offering that lets you rent virtual computers on Amazon's own infrastructure. **Amazon Web Services** (**AWS**) delivers a set of services that together form a reliable, scalable, and inexpensive computing platform "in the cloud".

Example 3:

Azure Platform : By contrast, Microsoft is creating the Azure platform. It enables .NET framework application to run over the Internet as an alternate platform for Microsoft developer software running on desktop.
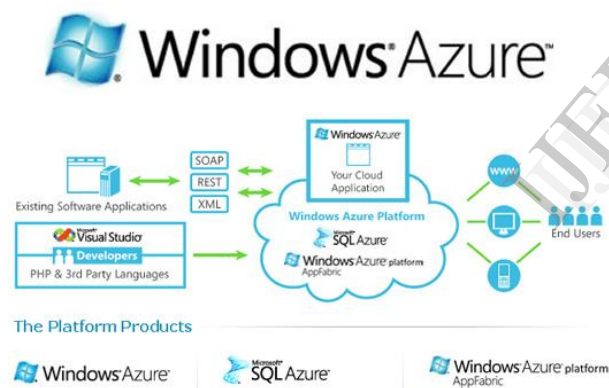
Example 4:

iCloud : iCloud is a cloud storage and cloud computing service from Apple Inc. announced on June 6, 2011 at the Apple Worldwide Developers Conference (WWDC). The service allows users to store data such as music files on remote computer servers for download to multiple devices such as iOS-based devices, and personal computers running Mac OS X or Microsoft Windows. It also replaces Apple's Mobile Me service, acting as a data syncing center for email, contacts, calendars, bookmarks, notes, to-do lists, and other data. As of February 2012 the service has over 100 million users.

Example 5:

E-Governance : Cloud Computing provides a great opportunity for governments across the globe, to provide reliable E-Governance quickly, at lower costs. Cloud computing features like application virtualization, end-to-end service management, instant deployment and ease of maintenance are catalysts that jumpstart application deployment on the Cloud. With proper planning, execution, training and good management, the Cloud infrastructure can greatly reduce overall costs for government departments maintaining and managing E-Services for E-Governance, and help in efficiently utilization. India's remote districts and villages, which may only have electricity for a few hours a day, which is essential for setting up advanced IT infrastructure such as servers, storage, etc. can now get a server for development and hosting through the power of cloud computing. Eucalyptus Systems today announced that the open source Eucalyptus Infrastructure-as-a-Service (IaaS) is the cornerstone of the e-governance cloud project by the National Informatics Centre (NIC) with an aim to deliver the power of information technology to remote areas throughout the country

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