

Cloud Computing

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ABSTRACT

Cloud computing is Internet- ("cloud-") based development and use of computer technology ("computing"). In concept, it is a paradigm shift whereby details are abstracted from the users who no longer need knowledge of, expertise in, or control over the technology infrastructure "in the cloud" that supports them. Cloud computing describes a new supplement, consumption and delivery model for IT services based on Internet, and it typically involves the provision of dynamically scalable and often virtualized resources as a service over the Internet. The term cloud is used as a metaphor for the Internet, based on the cloud drawing used to depict the Internet in computer network diagrams as an abstraction of the underlying infrastructure it represents. Typical cloud computing providers deliver common business applications online which are accessed from a web browser, while the software and data are stored on servers. These applications are broadly divided into the following categories: Software as a Service (SaaS), Utility Computing, Web Services, Platform as a Service (PaaS), Managed Service Providers (MSP), Service Commerce, and Internet Integration. The name cloud computing was inspired by the cloud symbol that is often used to represent the Internet in flow charts and diagrams.

INTRODUCTION: THE CLOUD COMPUTING AN INTRODUCTION:

What is Cloud Computing?

Cloud computing is a centralized virtual software available in the server which provides all the required resource to the users where the user don't need to think about the location or a device. Just need to browse and have all that is required.



Why use Cloud Computing?

In every point of time, lots of people waste something in their lifespan. Like investing money on new but useless gadgets. Many times people like to go for a junk bore movies, in the same way, in older days every company was to license their software's through CDs DVDs. And when it was to come on upgrading, they were to face lots of problems, but what is here? Will these problems be faced here as well? When this method comes as a service part like rental the cost of supplying and vendor system could be reduced, where the software comes to your organization directly.

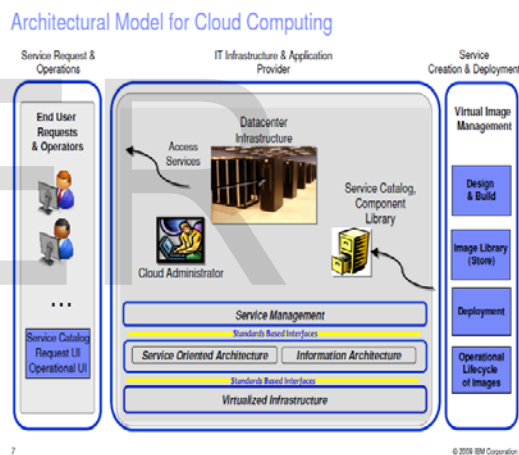
Life before Cloud Computing

Traditional business applications— like those from SAP, Microsoft, and Oracle—have always been too complicated and expensive.

- They need a data centres with office space, power, cooling, bandwidth, networks, servers, and storage.

- A complicated software stack. And a team of experts to install, configure, and run them.
- They need development, testing, staging, production, and failover environments.
- The cost of infrastructure

Architecture model for cloud computing



How it works?

There will be one server which will distribute the resources say if you have any type of software that will be able to share every operational environment to the clients. The files can be maintained by either server or client, but to work with environment you will need server communication for access. So this is the simple algorithm process for cloud computing.

Classic Cloud Computing:

In olden days the cloud computing was used in many technologies. Past website were to be under web 1.0 which restricts RIA (Rich Internet Applications), some computational sequence on client server methodology were not been executed. So what they are doing is handling the client side software utilities, which helps to transfer only the Meta data not the working environment. For e.g. Skype,

messengers, antivirus, and other applications. These applications don't have any centralized services and recourses.

Cloud Computing as Business Tool:

How can we utilize this wonderful concept as business?

We can service in:

1. Infrastructure service: making Company's infrastructure with this concept.
2. Software as service: Providing the software's as service to the workgroup of a company with some rental and other attractive offers.
3. Platform as service: Giving away a embedded electronic gadget tool, reduces the cost of installations, make it to work as a Personal Computer to the end user.

Cloud Infrastructure



Physical



Network center Infrastructure



Physical security

Basic needs for Cloud Computing:

Internet is the most basic and important need for cloud computing. Cluster of computers like intranet/ LAN can also be basic requirement. For the INTERNET/INTRANET/LAN one needs to be strong on basic foundation on RIA. RIA is a concept falls on Web 2.0 concepts, all the applications are possibly designed under AJAX, or any tools that does not refresh your web application.

SILVER LITE, AJAX, FLEX can be used for developing RIA in Shock wave format.

Cloud computing is not going to stop here! The above tools are pretty much helpful for developing the interfaces but not the background process. JAVA can be the right language to do background process like handling the formats of files. For e.g. when working on with Google

docs. You need to save the file as they are compatible with Microsoft word so they have some engine to make your document save in the required format. Isn't this great?

Core objectives of Cloud Computing

Core objectives and principles that cloud computing must meet to be successful:

- Security
- Scalability
- Availability
- Performance
- Cost-effective
- Acquire resources on demand
- Release resources when no longer needed
- Pay for what you use
- Leverage others' core competencies.

TYPES OF CLOUD COMPUTING

Private cloud:

The cloud infrastructure is operated solely for an organization. It may be managed by the organization or a third party and may exist on premise or off premise.

Community cloud:

The cloud infrastructure is shared by several organizations and supports a specific community that has shared concerns (e.g., mission, security requirements, policy, and compliance considerations). It may be managed by the organizations or a third party and may exist on premise or off premise.

Public cloud:

The cloud infrastructure is made available to the general public or a large industry group and is owned by an organization selling cloud services.

Hybrid cloud:

The cloud infrastructure is a composition of two or more clouds (private, community, or public) that remain unique entities but are bound together by standardized or proprietary technology that enables data and application portability (e.g., cloud bursting).

Cloud Computing Security

Security is the major issue for cloud computing

Analyzing Cloud Security

Some key issues: trust, multi-tenancy, encryption, compliance



- Clouds are massively complex systems can be reduced to simple primitives that are replicated thousands of times and common functional units
- Cloud security is a tractable problem

- There are both advantages and challenges

General Security Advantages

- Shifting public data to a external cloud reduces the exposure of the internal sensitive data
- Cloud homogeneity makes security auditing/testing simpler
- Clouds enable automated security management
- Redundancy / Disaster Recovery

General Security Challenges

- Trusting vendor's security model
- Customer inability to respond to audit findings
- Obtaining support for investigations
- Indirect administrator accountability
- Proprietary implementations can't be examined
- Loss of physical control
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Foundational Elements of Cloud Computing Primary technologies

- Virtualization
- Grid technology
- Service Oriented Architectures
- Distributed Computing
- Broadband Networks
- Browser as a platform
- Free and Open Source Software

Other technologies

- Autonomic Systems
- Web 2.0
- Web application frameworks
- Service Level Agreements

Cloud Computing In 2010

Cloud computing and SaaS (software as a service) were big in 2009 and will only get bigger this year as network managers cut costs and boost productivity by running applications that otherwise would require more manpower, hardware, and software resources in-house. Although it's unlikely that data centers and IT departments are going away anytime soon, admins should increasingly be able to cut through the vendor hype, observe their colleagues' success stories, and learn for themselves

through pilot programs and low-risk projects about how cloud computing and SaaS can help them in 2010.

According to research firm Gartner, cloud computing services revenue should total \$56.3 billion for 2009, representing a 21.3% increase compared to 2008. The market is expected to explode to \$150.1 billion in 2013.

Gartner expects SaaS revenue to total \$7.5 billion in 2009, which represents a 17.7% increase over 2008 revenue of \$6.4 billion. SaaS demand is expected to continue to surge to a total of more than \$14 billion by 2013.

CLOUD COMPUTING IN INDIA

- Indian enterprises are soaring to the cloud as the cloud computing business here is expected to skim the skies in a few years
- Software as a service (a part of cloud computing) market in India which was about \$70 million in 2008 and cloud computing is expected to hit the \$1 billion mark soon.

Driving factors in India:

- Low cost
- High operational efficiency
- Elasticity
- Scalability

The Benefits

Hosting your information on an outsourced system (that is maintained by a third-party) can really free up space and cut costs. With cloud hosting, you can

- Access your data at all times – not just while in the office
- A physical storage center is no longer needed
- Most have a pay structure that only calls for payment only when used
- Relieves burden on IT Professionals and frees up their time in the office
- Easily scalable so companies can add or subtract storage based on their own needs

The Negatives

If you are going to move all of your information to data centers situated outside your company, then security should be of utmost importance.

- Lost control comes with handing over your data and information
- Depending on third-party to ensure the security and confidentiality of data and information
- If your cloud host disappears, where does your information go?

Conclusion

In this paper conclude that the Cloud computing users can avoid capital expenditure (CapEx) on hardware, software, and services when they pay a provider only for what they use. Consumption is usually billed on a utility (resources consumed, like electricity) or subscription (time-based, like a newspaper) basis with little or no upfront cost. Other benefits of this time sharing-style approach are low barriers to entry, shared infrastructure and costs, low management overhead, and immediate access to a broad range of applications. In general, users can terminate the contract at any time (thereby avoiding return on investment risk and uncertainty), and the services are often covered by service level agreements (SLAs) with financial penalties.

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