



## CLOUD COMPUTING IN ACADEMIC LIBRARIES

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### ABSTRACT:

Cloud computing technology came up as a boon for academic libraries and is offering various opportunities for all types libraries to connect their services with clouds. The paper presents an overview of cloud computing and its possible application that can be clubbed with library services on the web based environment. This study may be helpful in identifying and generating cloud based services for libraries and best practices.

**Key Words:** Cloud Computing, consortium, Paas, Saas, Hybrid Cloud

### INTRODUCTION :

Now a day we are living in the age of information. Information technology play very important role in library science. For collection, storage, organization, processing, analysis of information. Library filed facing many challenges in the profession due to applications of information technology. New concepts are being added to ease the practices in the libraries is also accepting many new technologies in the profession as they suit the present information handling and they satisfy needs of the knowledge society. With the advent of information technology, libraries have become automated which is the basic modern need towards advancement followed by networks and more effort are towards virtual academic libraries.

The emergence of e- digital publication libraries, internet usage, social media web tools application for libraries, consortium practices leads to the further developments in library profession. The latest technology trend in library science is use of cloud computing for various purposes and for achieving economy in library function. Since cloud computing is a new and important area the professionals should be

aware of it and also the application of cloud commuting in library science in academic library.

### What is Cloud Computing?

Cloud computing is not a new technology that suddenly appeared on the web but is a new form of computing. Cloud computing is a kind of computing technology which facilitates in sharing the resources and services over the internet rather than having these services and resources on local servers/ nodes or personal devices. The combination of servers, networks, connection, application and resources is defined as 'cloud'. Cloud computing is acting as a resources pooling technology for accessing infinite computing services and resources as per demand of users and can be compare with models of pay as you use of utility model same as used for mobile services usages and electricity consumption.

### History of Cloud Computing

The Greek myths tell of creatures plucked from the surface of the Earth enshrined as constellations in the night sky. Something similar is happening today in the world of computing. Data and programs are being swept up from desktop PCs and corporate server

rooms and installed in the Compute Cloud. In general, there is a shift in the geography of computation. What is cloud computing exactly? As a beginning here is a definition.

“An emerging computer paradigm where data and services reside in massively scalable data centers in the cloud and can be accessed from any connected devices over the internet”

Like other definitions of topics like these, an understanding of the term cloud computing requires an understanding of various other terms which are closely related to this. While there is a lack of precise scientific definition for many of these terms, general definitions can be given.

How is cloud computing different?

For long of the past 30 years, software development and system engineering has centered primarily on the personal computer. The PC era was characterized by monolithic, proprietary operating systems and programs that had long development times and release cycles. In that environment, the design of software was isolated and all attention focused on a single application. With cloud computing, hardware and functionality traditionally installed and run in a local environment is now performed on the network, in the internet cloud. In essence, the internet cloud becomes the development platform and the operating system to which programmers write reusable, constantly updated software components that are delivered over the network and that can be embedded or loosely coupled with other Web applications.

Academic libraries have been using some cloud computing services for over a decade. Online databases are accessed as cloud applications. Large union catalogs can also be defined as cloud applications. However, a look outside libraries is warranted to better understand the value proposition of cloud computing.

#### **Models of Cloud Computing:**

**Service Models:** Though, there are various service models originated on the web but three service models widely used for delivering the different cloud based services that described below:

#### **Infrastructure as a service (IaaS):**

This service model comprises a wide range of features, services and resources which support to build a virtual infrastructure for computing. Organization can be developed entire infrastructure on demand e.g. Amazon Web Services, Rackspace, Savvis, HP IBM, Sun and Google Base.

**Platform as a Service (PaaS):** Platform as a Service Model helps in generating the computing platform to run the software and other tools over the internet without managing the software and hardware at the end of user side. Amazon Elastic Cloud, EMC Atmos, Aptana and GoGrid are the examples of PaaS model which providing Platforms to users in maintaining and supporting their IT infrastructure without spending huge amount for buying hardware, software and related technology.

**Software as a Service (SaaS) :** In this model, users can avail the facilities to access and use any software available with cloud vendors. However, it is not necessary for the users to buy the software, install and run, maintenance the application on their own servers. The cloud users need not to manage the cloud infrastructure and platform on which the application is running. This service model provides online email applications, free services, limitless storage, and remote access from any computer or device with an internet connection.

**Deployment Models :** Currently, four types of cloud deployment models have been defined in the cloud community:

**Private Cloud :** This kind of deployment model solely development and managed by a single organization or a third party regardless whether it is located in premise or off premise. There are

several reason behind the development of private cloud for an organization some key reasons include optimize utilization of existing in house resources, security concerns including data privacy and trust also make private cloud an option for many firms, data transfer cost from local IT Infrastructure to a public Cloud is still rather considerable, organizations always require full control over mission critical activities that reside behind their firewalls and for research and teaching purposes.

**Community Cloud:** this is a joint venture of several organizations come together to build a cloud infrastructure as well as polices through which cloud services will be rendered. This type of cloud deploy model helpful in developing of economic scalability and democratic equilibrium. In the community cloud model, cloud infrastructure may be hosted by a third party vendor or within one of the organization in the community.

**Public Cloud :** Public cloud is meant for general public use and open to all. This kind of deployment model of cloud computing is developed by any cloud computing agency and having own policy, value and profit, costing, and charging model. Some popular public cloud services include Amazon EC2, S3 Google App Engine and Force.com.

**Hybrid Cloud:** This type of cloud made from more than one cloud deployment models that may be public, private, community and other models also, bound together with by standardized or proprietary technology that enables data and application portability ( e. g. cloud bursting for load balancing between clouds. ) The Hybrid cloud model is widely used by institution and organization because this model provides more facilities and flexibilities in making optimum use of their resources and accomplishing the tasks. Applications of Cloud Computing in Libraries are shifting their services with the attachment of cloud and

networking with the facilities and access these services anywhere and anytime. In the libraries, the flowing possible areas were identified where cloud computing services and applications may be applied:

**Building Digital Library / Repositories :** In the Present situation, every library needs a digital needs a digital library to make their resources, information and services at an efficient level to ensure via the network. Therefore, every library is having a digital library that developed by using any digital library software. In connection to cloud based digital library software, Duraspace is having two softwaresnamely Dspace and Fedora Commons but Dspace is widely used for building digital libraries / repositories relative to Fedora Commons. Dura Cloud provides complete solutions for developing digital libraries / repositories with standard interfaces and open source codes for the both software.

**Searching Library Data :**OCLC is one of the best example for making use of cloud computing for sharing libraries data for years together. For instance, OCLC World Cat service is one of the popular service for searching library data now is available on the cloud. OCLC is offering various services pertain to circulation, cataloguing, acquisition and other library related services on cloud platform through the web share management system. Web share management system facilitates to develop an open and collaboration platform in which each library can share their resources, services, ideas and problem with the library community in the clouds. On the other hand, the main aim of web-scale services is to provide cloud based platforms, resources and services with cost benefit and effectiveness to share the data and building

**Present Condition of Indian Libraries:** In India, cloud computing in academic libraries is in development phases. Libraries are trying to

provide to users cloud based services but in real sense they are not fully successful owing to the lack of good service providers and technical skills of LIS Professionals in the field of library management using advanced technology. But some services such as digital libraries, web documentation and using web 2.0 technologies are running on successful cloud computing libraries include Dura cloud, OCLC services and Google based cloud services. Nowadays many commercial as well as open sources vendors ( i.e. OSS ) are clubbing the cloud computing technology into their services and products. However cloud computing technology is not fully accepted in the Indian libraries but they are trying to develop themselves in this area.

#### **CONCLUSION:**

Academic libraries have the opportunity to improve their services and relevance in today's information society. Cloud computing is one avenue for this move into the future. It can bring several benefits for libraries and give them a different future.

Cloud computing builds on decades of research in virtualization, distributed computing, utility computing, more recently networking, and web software services. It implies a service oriented architecture, reduced information technology overhead forth end-user, great flexibility, reduced total cost of ownership, on demand services and many other things. In today's global competitive market, companies must innovate and get the most from its resources to succeed. Cloud computing infrastructures are next generation platforms that can provide tremendous value to companies of any size. They can help companies achieve more efficient use of their IT hardware and software investments and provide a means to accelerate the adoption of innovations. Cloud computing increases profitability by improving resource utilization. Costs are driven down by delivering appropriate resources only for the time those

resources are needed. Cloud computing has enabled teams and organization to streamline lengthy procurement processes. Cloud computing enables innovation by alleviating the need of innovators to find resources to develop, test, and make their innovations available to the user community. Innovators are free to focus on the innovation rather than the logistics of finding and managing resources that enable the innovation.

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