

# Provision of Uninterrupted Services to the Users in the Libraries and Information Centers through Cloud Computing

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**Abstract:** Cloud computing is a boon for the networking technology to overcome the hindrances of technical capabilities of handling information or data. The cloud is paved way to overcome the problems of infrastructure, storage, servers and other technical capabilities of the handling the information. The paper overviews the concept of cloud computing, architecture, storage and models of cloud computing. The cloud computing is also boon for the libraries to manage the data or information by using this technology. It also helps in maintaining the large online databases and content management systems. The cloud computing applied in the areas of libraries like Library automation, institutional repositories, web hosting, content management system, hosting databases, Knowledge Management etc.

**Keywords:** Cloud computing, Libraries, Information Technology, Knowledge Management, Networks, Computers

## 1 INTRODUCTION:

Cloud computing is a type of Internet based networking system for processing the data and sharing of data to other devices.

The origin of the term cloud computing is unclear. The word "cloud" is commonly used in science to describe a large agglomeration of objects that visually appear from a distance as a cloud and describes any set of things whose details are not further inspected in a given context. The cloud symbol was used to represent networks of computing equipment in the original ARPANET by as early as 1977, and the CSNET by 1981, both predecessors to the Internet itself. The term cloud has been used to refer to platforms for distributed computing.

Cloud computing exhibits the following key characteristics

1. Alertness for organizations may be improved.
2. Cost reductions are claimed by cloud providers.
3. Device and location independence.
4. Maintenance of cloud computing applications is easier.
5. Multitenancy enables sharing of resources and costs across a large pool of users.
6. Performance is monitored by IT experts from the service provide.
7. Productivity may be increased when multiple users can work on the same data simultaneously.
8. Reliability improves with the use of multiple redundant sites.
9. Scalability and elasticity via dynamic ("on-demand") provisioning of resources on a fine-grained, self-service basis in near real-time.
10. Security can improve due to centralization of data, increased security-focused resources.

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## 2 CLOUD COMPUTING DEPLOYMENT MODELS

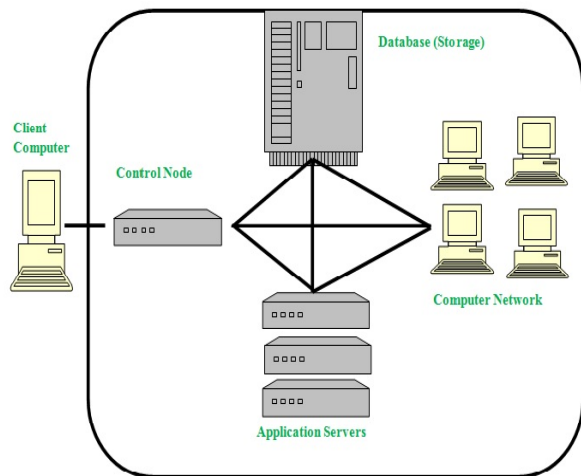
**2.1 Private cloud** services are delivered from a business data center to internal users. This model offers versatility and convenience, while preserving the management, control and security common to local data centers.

In the **Public cloud model**, a third-party provider delivers the cloud service over the internet. Public cloud services are sold on demand, typically by the minute or hour. Customers only pay for the CPU cycles, storage or bandwidth they consume. Leading public cloud providers include Amazon Web Services (AWS), Microsoft Azure, IBM SoftLayer and Google Compute Engine.

**2.2 Hybrid cloud** is a combination of public cloud services and on-premises private cloud with orchestration and automation between the two. Companies can run mission-critical workloads or sensitive applications on the private cloud while using the public cloud for bursting workloads that must scale on demand. The goal of hybrid cloud is to create a unified, automated, scalable environment that takes advantage of all that a public cloud infrastructure can provide while still maintaining control over mission critical data.

## 3 CLOUD COMPUTING ARCHITECTURE

Cloud Computing Architecture:



The cloud computing architecture can be divided into two sections like front end and back end, both ends connect each through networks by using internet. The front end is computer client and user interface of the application. The back end consists of computers, servers, and data storage system by creating cloud. A central server administers the system, monitoring traffic and client demands to ensure everything runs smoothly. It follows a set of rules called protocols and uses a special kind of software called middleware. Middleware allows networked computers to communicate with each other.

## 4 CLOUD COMPUTING SERVICES

1. Software as a service (SaaS): Consumer can use the provider applications running on cloud infrastructure. The applications are accessible via web browsers or a program interface. The consumer does not control or manage the cloud infrastructure. Eg. CRM, Email, virtual desktops, games etc.
2. Platform as a service (PaaS): The capability provided to the consumer is to deploy onto the cloud infrastructure consumer created or acquired applications, created using programming languages, libraries, services, and tools supported by the provider. Eg. Database, web servers, development tools etc.
3. Infrastructure as a service (IaaS): The capability provided to the consumer is to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications. Eg. Virtual machines, servers, storage, load balancers etc.

SaaS	⇒ High scalable internet based applications	⇒ Google Docs, acrobat.com
PaaS	⇒ used to design, develop, build and test applications	⇒ Amazon, Azure, Platform
IaaS	⇒ pay per used model	⇒ GoGrid, 3Tera, Amazon

## 5 CLOUD COMPUTING IN LIBRARY AND INFORMATION CENTERS

The library and information centers are the social institution provides information the users in a realistic way. Due to the technology revolution the libraries are also adopted the modern technology for daily routine works, storage, retrieval and

dissemination of information through the distributed computing. As technology grows the library and information centers are also grown by using these technologies. Earlier, the libraries are used the traditional methods for storing the information and in the modern days the libraries are using the computational technologies to store and retrieval the information.

The library and information centers are having the large amounts of data in traditional form as well as in digital form. The maintenance of large data is become a challenge to librarian or information manager. The financial crunches and management is not interested to provide sophisticated technologies because of financial involvement. The cloud computing came to rescue the librarian to some extent with lesser involvement of finance. The libraries can provide uninterrupted services to the users by 24x7 at any place and at any time without any delay. The clouds are mainly using in libraries for Library Automation, Digital Libraries, Knowledge management and other areas.

#### 5.1 Areas of Cloud Application in Libraries:

- Digital Libraries / Institutional Libraries
- Library Automation
- Data Retrieval
- Website Hosting
- Databases driven services
- Content Management System
- Knowledge management

#### 5.2 Cloud Libraries

1. OCLC
2. Library of Congress
3. Exlibris
4. Scribd
5. Google Docs / Google Scholar
6. Worldcat

In India, cloud computing in 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 web2.0 technologies are running on successful modes. 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.

#### 6 CONCLUSION

Libraries are increasing expected to demonstrate their value to the institutions they serve, particularly by demonstrating the return on investment for expenditure on resources. Cloud-computing allows them to reallocate resources from managing technology to developing added-value services that satisfy these demands. Cloud technology promotes an increased collaboration between libraries, researchers, and students, both in and outside of a single campus. The cloud breaks down institutional walls to give users access to a wider range of research materials. With less time required for hardware maintenance and troubleshooting, libraries can focus their attention on faculty and student needs. It is also applicable to the libraries themselves – resource sharing, shared services, and benchmarking among cohorts is not new to research libraries, but cloud platforms offer more efficient and innovative ways of enabling those interactions. Cloud-based products also promise to be easier to maintain and update – changes and configurations can be made once and rolled out across a whole system or several libraries.

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