

Integration Of Cloud Storage and Cloud Servers in Modern Library Management

¹ KM Rinki, ² K. L. Mahawar

¹Research Scholar and Author of the Correspondence, Department of Library and Information Science, Babasaheb Bhimrao Ambedkar University, Vidya Vihar, Rae-Bareilly Road, Lucknow-226025, India

²Professor & Head, Department of Library and Information Science, Babasaheb Bhimrao Ambedkar University, Vidya Vihar, Rae-Bareilly Road, Lucknow-226025, India
Email: rinkiraina25@gmail.com, mahawar67@gmail.com

Abstract

The largest libraries found in ancient Indian universities, such as Nalanda, Takshila, and Vikramshila, were built and operated effectively. This system offers a vast storage capacity. At that time, the development of virtual technology was not visible. Still, in the library, a huge library divided into various sections on a large scale was necessary; in the present form, such a huge library does not exist. Still, the library is making proper use of cloud storage devices for adequate data storage and management of access time. A cloud storage system is a systematic and comprehensive solution for storage. Being present in the library is more beneficial for maintaining a readership; it is also easy to use. Cloud server centers have been established in various locations where the storage system operates efficiently. The study will focus on areas such as Cloud computing technology in library management, library storage systems, library management levels, Cloud storage in library management, the benefits of cloud storage in libraries, cloud storage platforms, library cloud storage architectures, and Major Cloud Provider Servers.

Keywords: Cloud Computing, Library Management, Storage, Platform, Data

I. Introduction:

As computer and communication technologies have evolved throughout time, the amount of digital data generated has increased along with the availability of resources for convenient access. Among the various rapidly developing technologies of this kind, cloud computing may hold the solution. With the use of cloud computing and virtualization technologies, on-premise computing resources—such as networks, servers, storage, IT apps, and services—have undergone significant changes to become shareable computing resources.

II. Cloud Computing:

The concept of cloud computing, which is supported by virtualization technology, has become a new paradigm for computing and is still driving the revolution in ICT. Cloud computing is now widely used in the field of higher education. A cloud-based library system using virtualization technology will relieve academic libraries of the responsibility of managing system upgrades, purchasing and installing resources, and performing other associated administrative tasks. (Shaw & Tanmay, 2019) With features like resource collections and allocation, elasticity, calculated measured service, scalability, multi-tenancy, self-provisioning of resources, and on-demand self-service, cloud computing provides fundamental services like Infrastructure as a Service, Platform as a Service, and Software as a Service. (Suresh, 2021)

1. Some major functions of cloud computing technology in library management:

- Document Downloading service
- Document delivery service
- Document sharing
- Digital Preservation
- E-learning
- Collection Development
- Inter-Library loan request
- Storage of reading materials, etc.

2. Role of cloud computing technology in library management:

- Management is a process that works to achieve the goals and objectives of an organization. In the new and high-level use of computing systems in scientific management, Cloud computing as library storage is a new concept.
- The highest profit of cloud computing Library data can be made unique using security standards.
- Cloud computing is the collective name for the delivery of computing resources over the Internet. Universities or institutions that use cloud technology benefit from the experience and flexibility of providers, which saves time and money while expanding their IT resource options.
- Progress continued in the 1990s as virtualization and cloud computing infrastructure introduced many possibilities for everyday use.

3. The Use of Cloud Computing Technologies in Library Management provided the following support:

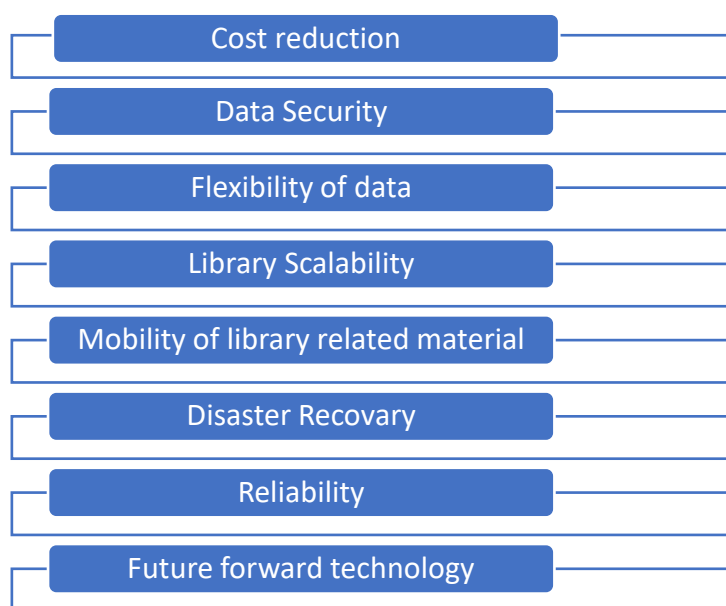


Figure 1: Uses of cloud computing Technology in the libraries

Source: Author's self-work

4. Cloud Computing Level of Library Management:

Software as a Service (SaaS): Application software is installed and run in the cloud-by-cloud providers under the Software as a Service (SaaS) model, and cloud customers access the program using cloud clients. Cloud users are not responsible for the platform and cloud infrastructure on which the application runs. (Kumar & Mandal, 2013).

Platform as a Service (PaaS): provides comprehensive cloud computing platforms, including operating systems, tools, and applications. In the cloud environment, it lets users create, test, deploy, update, and host services. (Yuvaraj, 2015)

Infrastructure as a Service (IaaS): In the context of cloud computing, this is the lowest layer. Information technology infrastructure resources like memory and storage are abstracted as services by IaaS providers. A cloud service supplier oversees the actual system and provides the end user with a virtualized operating system infrastructure and full control over the virtual picture is granted to the user, who may customize it to suit their needs. (H P & Konganurmth, 2014)

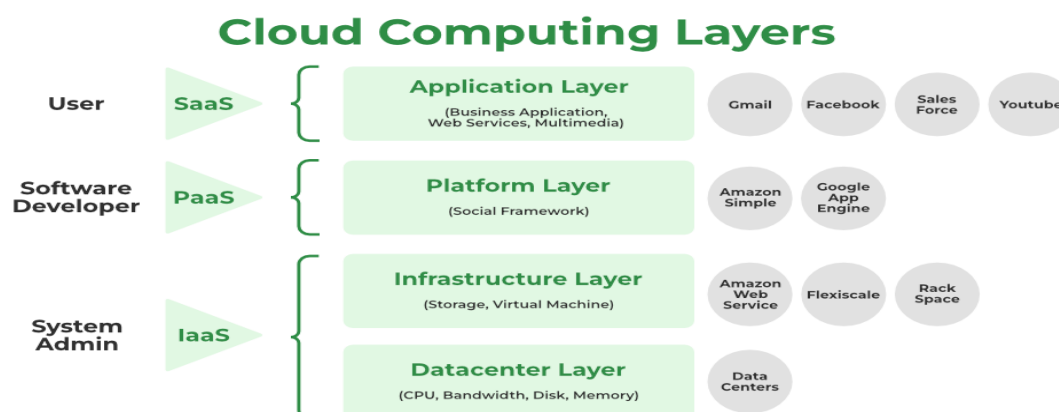


Figure 2: Three layers of Cloud Computing Services

Source: <https://www.geeksforgeeks.org/devops/layered-architecture-of-cloud/>

5. Major Benefits of Cloud Storage in the Library:

- Data availability: Cloud data is accessible from any location with an Internet connection.
- Accessibility and usability: Most cloud data storage services provide a user-friendly interface and drag-and-drop abilities. Consider Google Drive from Google or Apple's iDrive, for example. Both of them include an easy-to-use interface that allows you to upload files to your online storage without the need for technical assistance.
- Security: Cloud storage stores your data on several redundant servers, so even in the event of a data centre failure, your data will be monitored and protected by the other data centres.
- Cost-efficient: Internal costs might be decreased with the use of cloud data storage. This technology allows the cloud storage vendor to manage and store the company's data without the requirement for internal personnel and support.
- Automation: Cloud storage functions similarly to a hard drive, but online. Since the cloud provider handles everything automatically, numerous users may work independently while uploading data to the cloud.
- Multiple Users: Several users can access the same cloud environment. Working on a single file with several individuals is made possible via cloud storage. The authorized individual has real-time access to your information from anywhere in the globe. (QA, 2025)

6. Cloud Storage platforms:

- Amazon Web Services (AWS): It provides on-demand computing services for building and running websites and apps, including virtual servers and storage. Because of its reputation for security, dependability, and adaptability, AWS is a well-liked option for businesses that need to handle and store sensitive data. Also provides a practical cloud experience with actual infrastructure. scalable, safe, and reasonably priced platform for app development.
- Microsoft Azure: It is a cloud computing service that provides a range of services, including databases, networking, storage, and processing. Through Microsoft-controlled data centres, it assists companies and developers in creating, implementing, and overseeing applications.
- Google Cloud Platform (GCP): A collection of cloud services offered by Google. Google Cloud Platform (GCP) is based on the same technology that underpins Google services, including Drive, Gmail, YouTube, Docs, and Search. Because GCP may be up to 20% less expensive than other cloud providers like AWS for hosting data and databases, many businesses choose it.
- IBM Cloud (Kyndryl): Created by IBM, this cloud service provides users with an additional set of options for deploying their apps in the cloud. It provides public, private, hybrid, and multi-cloud methods for IaaS, SaaS, and PaaS services. (GeeksforGeeks, 2025)

III. Conclusion:

Cloud computing services in libraries and information centres signify a significant change in the way that libraries finance and get IT-focused services.

Well-established libraries and information centres have opened up new business prospects for outsourcing vendors and IT service providers. The provision of on-demand computer resources via the Internet is known as cloud computing. Software and data are kept on distant servers that are reachable from any location with an Internet connection. When it comes to Library management, it is used to store and access all the important information, resources, and essential data related to the work, thereby saving time, money, and energy.

References:

- [1]. Breeding, M. (2012). Cloud Computing for Libraries: American Library Association.
- [2]. Cloudflare. (n.d.). Retrieved from What is the cloud? |Cloud definition: <https://www.cloudflare.com/learning/cloud/what-is-the-cloud/>
- [3]. Flowers, S. (2012). Evaluating Teen Services and Programs. American Library Association.
- [4]. GeeksforGeeks. (2025, 8 6). [geeksforgeeks](https://www.geeksforgeeks.org/devops/google-cloud-platform-tutorial/). Retrieved 8 14, 2025, from [www.geeksforgeeks.org: https://www.geeksforgeeks.org/devops/google-cloud-platform-tutorial/](https://www.geeksforgeeks.org/devops/google-cloud-platform-tutorial/)
- [5]. H P, S., & Konganurmam, M. (2014). Cloud Computing Services In Libraries: An Overview. 9th Convention PLANNAER-2014, 296-301.
- [6]. Kumar, A., & Mandal, S. (2013). Development of cloud computing in an integrated library management and retrieval system. *International Journal of Library and Information Science*, 5(10), 394-400. doi:DOI: 10.5897/IJLIS2013.0367
- [7]. Katz, L. S. (2013). Integrating Print and Digital Resources in Library Collections. Routledge.
- [8]. Pujar, S. M., & Bansode, S. (2012). Cloud Computing and Libraries. *DESIDOC Journal of Library & Information Technology*, 506-512.
- [9]. QA. (2025). QA. Retrieved from [www.qa.com: https://www.qa.com/resources/blog/10-benefits-of-using-cloud-storage/](https://www.qa.com/resources/blog/10-benefits-of-using-cloud-storage/)
- [10]. Rahoo, L. A., & Khan, S. A. (2020). Usage and Awareness of Cloud Computing Applications by Library Professionals of Sindh Province. *Library Philosophy and Practice (e-journal)*, 2-10.
- [11]. Shaw, J. N., & Tanmay , S. D. (2019). Model Architecture for Cloud Computing-Based Library Management. *NEW REVIEW OF INFORMATION NETWORKING*, 17-30. doi:doi.org/10.1080/13614576.2019.1608581
- [12]. Suresh, S. R. (2021). An Electronic Digital Library Using Integrated Security Methods and Cloud Storage. *Int. J. Advanced Networking and Applications*, 4839-4844.
- [13]. Suman, & Singh, P. (2016). CLOUD COMPUTING IN LIBRARIES: AN OVERVIEW. *International Journal of Digital Library Services*, 6(1), 121-127.
- [14]. Yuvaraj, M. (2015). Cloud Computing Software and Solutions for Libraries: A Comparative Study. *Journal of Electronic Resources in Medical Libraries*, 12(1), 25-41. doi:DOI: 10.1080/15424065.2014.100347925
- [15]. Zubairu, A. N., & Akiola, J. O. (2021). Awareness and Adoption of Cloud Computing in Nigerian Libraries: An aid to Library Science. *Library Philosophy and Practice (e-journal)*, 1-15.