Enhancement of Library Services in Cloud Computing Systems: A Comprehensive Study

Ranuri Inoka Kuruppu[1]

Abstract

[*In library and information management system, Cloud Computing plays a crucial role. The majority of libraries have been digitized and transmitted to internet platforms through manual systems. The majority of Cloud Computing Services have been identified and large amount of computing resources can be deployed in minutes through it. The study's goal is to talk about how libraries may improve their services. The research has looked into how cloud-based library services can enhance library services. The study's goals are to discover Cloud Based Application-related Library Services, as well as to identify Cloud Based plat forms-related Library Services. The paper presents some solutions for the problem of "How is the Library services enhanced Cloud-based Library Services". The main point of the study is to discuss objectives like, to find out Cloud Based Applications related Library Services, to identify Cloud Based platforms related to Library Services. to identify Cloud Base free services for Libraries. Secondary data have been used for this comprehensive study. The services are available by Cloud Technology are as storage services. Google Drive, Mega Drive, Dropbox, I Cloud etc. Utilizing cloud-based services, libraries may create library repositories. E-books can be saved and shared with the appropriate users. Professional support is required for library e-book lending services, which include numerous technical infrastructure and business process components. These elements form an ecosystem that allows libraries to secure licenses from companies to lend eBooks. Professional support is required for library e-book lending services, which include numerous technological infrastructure and business process components. Another important service is OPAC sharing. The Internet can be used to share bibliographic information. As a result, the bibliographical information of Networked Automated Libraries is elaborated by their Online Public Assess Catalog. As a result, Cloud Computing plays an important role in improving library and information services.*]

Keywords: Cloud Computing, Cloud Technology, Library repositories, OPAC Sharing, Technological infrastructure, Bibliographical Information.

1. Introduction

Cloud computing is the transmission of computing services over the Internet in order to provide speedier innovation, more flexible resources, and economies of scale. Because normally only pay again for cloud computing you use, which helps you cut costs, run your infrastructure more efficiently, or scale as your industry expands.

1.2 Benefits of Cloud Computing

Cloud computing represents a major change from how operations are usually viewed IT resources. The following are seven the most common reasons why companies are turning to cloud computing services: Cloud computing reduces the initial costs of purchasing hardware and software, or the costs of setting up and running on-site data centers—server racks, the round-the-clock electricity for power and cooling, and IT experts to maintain the infrastructure.

Most cloud computing services are self-service and on-demand, this implies that even enormous amounts of computing resources may be provisioned in minutes, typically with just a few mouse clicks, giving corporations a number of possibilities and reducing capacity planning stress. The capacity to outer diameter is among the benefits of cloud services. That implies delivering the right amount of IT assets example, more or less computer power, storage, and bandwidth—at the correct time and from the right geographic place, in cloud language.

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[1] **Librarian,** 174/8 "Daya Sewena", Kottela, Veyangoda, Sri Lanka; e-mail - **ranuriinoka88@gmail.com**

The most common cloud computing services are maintained on a global network of secure cloud data centers that are updated regularly with the modern generation of fast and efficient computing hardware. This has several advantages over a single corporate centre, including reduced application network latency and greater economies of scale.

1.3 Cloud Computing in Service Models

Cloud Computing is available in three main service models, which each serves to a particular set of business needs. Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS) are the major paradigms.

1.3.1 Infrastructure as a service (IaaS)

Infrastructure as a service (IaaS) is a cloud computing concept that uses the internet to supply virtualized computing resources. IaaS is one of the three primary categories of cloud computing services, along with software as a service (SaaS) and platform as a service (PaaS). Each resource is offered as a discrete service element, allowing IaaS to scale up or down quickly in response to demand while avoiding the need to buy real servers and other data centre equipment. A cloud computing service provider handles the infrastructure, while the user installs, configures, and manages software such as applications, middleware, and operating systems.

The key benefits of cloud computing are cost savings, flexibility, and availability. The provider is responsible for service platforms such as servers, software, and management, which can be scaled up or down to match individual's needs. Users or subscribers pay for the services they require, and those services are evolving. Cloud apps can be accessed and installed from anywhere in the world in hours, days, or weeks.

1.3.2 Platform as a service (PaaS)

Platform as a service (PaaS) is a cloud computing concept in which users receive hardware and software from a third-party provider over the internet. Those tools are typically required for application development. The software and hardware are hosted on the PaaS provider's own infrastructure. As a consequence, effectively alleviate the need for developers to established in-house gear and software in terms of developing or execute a new application. PaaS tools are often promoted as also being simple to use and convenient. Users will most probably be charged on a per-use basis. Because of the possible cost savings over on-premises alternatives, a company may find the shift to a PaaS attractive. For software design, PaaS does not replace a firm's complete IT architecture. It is made available through the hosted infrastructure of a cloud service provider. The most common method for users to access the service is through a web browser. PaaS could be used to supply services like application storage and Java programming via public, corporate, and mixed clouds.

1.3.3 Software as a service (SaaS)

Software as a service (SaaS) is a process of providing software as a service over the Internet. Instead of installation and maintenance software, you simply use the Technology to browse it, reducing the need for complex software and device management. Web-based software, on-demand software, and usually employs are all terms used to describe SaaS applications. SaaS apps, whatever their name, are hosted on the servers of a SaaS provider. The service provider is in charge of the application's security, availability, and performance.

1.4 Development Models

Technological standpoint, there is a little or no difference between a public and a private model because their structures are relatively similar. A private cloud, on the other hand, is owned by a single company and is not accessible to the general public. As a result, it's also known as an internal or corporate model. The server can be hosted either outside or on the owner's premises. These infrastructures, regardless of their physical locations, are maintained on a dedicated private network and use software and hardware that is solely meant for use by the owner company.

1.4.1 Public Cloud

The data centres where clients' operations execute are owned and run by the public cloud provider. Service provider is responsible for all hardware and infrastructure maintenance, as well as providing high-bandwidth connectivity to ensure that applications and data are accessed quickly. The fundamental virtualization software is also controlled by the cloud provider. Users share a pool of virtual resources that are automatically provisioned for and allocated to individual tenants through a self-service interface in public cloud systems. This means that multiple tenants' workloads may be executed concurrently on a shared physical user's CPU instances. The data of the each cloud tenant is logically separated from that of other tenants.

1.4.2 Private Cloud

The private cloud (also referred as an internal cloud or corporate cloud) is a cloud services environment whereby all equipment / software assets are devoted to a single client but only that customer has access to them. Private cloud combines the elasticity, scalability, and ease of delivery of services of cloud computing with the access control, security, and resource customization of on-premises infrastructure.

The following are a list of these technologies:

Virtualization extracts IT resources from their underlying physical hardware and reservoirs them into unbounded resource pools of computing, storage, memory, and networking capacity that can then be shared across multiple virtual machines (VMs), containers, or other virtualized IT infrastructure elements. Virtualization enables maximum utilization of hardware by reducing physical hardware limits, allowing hardware to be shared efficiently among multiple users and applications, and allowing cloud scalability, agility, and flexibility.

Administrators can use the management system to get central power over their infrastructure and the apps that operate on it. In a secure cloud, this allows for better privacy, availability, or resource utilization. Automation speeds up operations that would otherwise have to be done manually and repeatedly, such as server provisioning and integrations. Self-service resource delivery is achievable thanks to technology, that reduces the need for human intervention.

1.4.3 Community Cloud Computing

The term "Community Cloud Computing" people with a shared cloud computing environment aimed at a small number of organizations or employees (such as banks or heads of trading firms). The community's organizing principle will vary, but members will generally have similar security, privacy, performance, and compliance requirements. Members of the community may decide to use a mechanism that they (rather than the provider) use to vet those seeking access into the community.

1.4.4 Hybrid Cloud

A hybrid cloud is a cloud computing environment that mixes on-premises private cloud and fourth public cloud services with orchestration. This usually entails creating a link between the on data center and a public cloud. Additional private assets, including such network edge or even other clouds, may be involved in the connection.

2. Objectives of the study

- To find out Cloud Base Application related Library Services
- To identify Cloud Base platforms related to Library Services
- To identify the Cloud Base free services for Libraries

3. Type of the Research Data

Secondary data have been used.

4. Methodology

Comprehensive study method has been used for research data.

Free Cloud Base Storage Services

There are a plethora of common cloud storage alternatives available online. Most will save a variety of file formats, including as documents, video, and audio. We suggest doing some research to determine which service is best for you. Google Drive, Microsoft One Drive, and Drop-box are the three popular online storage services. Apple i-Cloud is a popular option for their devices and operating systems if you usually use Apple or Mac devises.

Google Drive

Google Drive is accessed files within Gmail Account. Original data were generated within Word processing, Spread Sheets and Presentations. Users can be shared files with others and collaborate with team members. Documents can be edited in bulk. Google drive can be used for storing any type of files.

Microsoft One Drive

Microsoft One drive is accessed file with Hotmail, Outlook or Microsoft account. It can be created original files within OneDrive using common Microsoft Office file types .File can be shared with other users and collaborate with team members on the same documents. Any kind of file type can be stored.

Drop-box

Drop-box is created with account an email address. Some file can be edited within the Drop-box website. In Drop-box files can be shared with files or folders. Any format of file can be stored.

Sky Drive

SkyDrive, which was created by Microsoft, provides 7GB of free storage capacity, with the option to purchase additional if needed. To utilize SkyDrive, you'll need to have a Microsoft account, yet publically available files can be accessed by anyone. You can embed your uploads onto your personal website in addition storing and sharing them.

i-Cloud

i-Cloud storage was created with such a storage space of 5GB. The space is utilized for photo and video backup, and documents can be updated in iCloud Drive. Anyone with an iCloud storage space may check it.

5. Enhancement of Library services in Cloud Computing

Cloud computing enables you to decouple the way to construct a service provisioning infrastructure from the library of end-user services. People can use cloud technology to share distributed resources and services from different businesses or sites. Cloud computing operates a system to share distributed assets in an open environment. It is a web virtual pool of computer power. People could use cloud technology to share distributed resources and services from different businesses or sites. Many companies, such as Amazon, Google, and Microsoft, are speeding up their development of Cloud Computing. Library field is facing numerous issues as a result of information technology applications. New concepts and technology are being added to make library procedures easier and to meet the demands of the public society of knowledge. Libraries have become automated as a result of the advancement of technology.

6. Library e-book lending services

Library e-book lending services require specialist assistance, which includes numerous technical infrastructure and business process components. These elements make up an ecosystem that empowers libraries to obtain licenses to lend books from publishers, gain access to controlled digital copies of each title, manage lending transactions for patrons, as well as provide customers with an interface or applications to search, access, and read materials provided by the library. These services, which are referred to as "digital lending," can comprise e-books, audio, streaming or downloaded video, and other sorts of content.It is not necessary to create a sophisticated ecosystem to provide access to free resources, like those with expired copyrights or those released under an open access agreement. Much of the material of interest to public library users, on the other hand, is protected by copyright, and publishers require particular control mechanisms in place to ensure that unrestricted copies of their digital assets do not end up on the internet. Publishers utilize digital rights management on their own platforms or for their e-commerce distributors, and library lending systems must have similar safeguards.

7. Shared Catalogue OPAC

A web catalog for online public access is a specialized system that catalogs books, movies, sound recordings, and other media forms. Network libraries can beshared information through the network. Network libraries may share a platform and provide access to their collection through a single platform using cloud technology . It is very simple to set up a union catalogue.

8. Document Download Services

Document download services is become more popular services .If network access is allowed, it's indeed easy to retrieve documents. Creating a copyright guideline for Article distribution services are based on a library's or a particular author's copy right law. Users can use this to request a copy of an article or a chapter from a book that is available in the library. This technology is being used by publishers to provide library access. Non-electronic journals, newspapers, and books are examples of article delivery services. Documents can sometimes be scanned and distributed electronically. If an article is available through a subscription E-Journal, a link to it will be provided. Each request will be subjected to fair use and copyright regulations. Through the request box, users can request an article or a book chapter.

9. Article Delivery Services

Creating a copyright guideline for article distribution services are based on a library's or a particular author's copy right law. Users can use this to request a copy of an article or a chapter from a book that is available in the library. This technology is being used by publishers to provide library access. Non-electronic journals, newspapers, and books are examples of article delivery services. Documents can sometimes be scanned and distributed electronically. If an article is available through a subscription E-Journal, a link to it will be provided. Each request will be subjected to fair use and copyright regulations. Through the request box, users can request an article or a book chapter.

10. Current Awareness Services (CAS)

The current awareness service gives the correct user the right information at the right time if they need it. It provides go information to the user. Whenever a document is accepted in the library, it is promptly reviewed and abstracted with the exact information needed by the users' programs.

11. Document Sharing

The availability of appealing applications such as file backup, data archival, and file-sharing has contributed to the widespread use of cloud storage in recent times. Cloud storage services, in particular, offer file sharing in a variety of ways. These differences can be seen in the permission types that are offered and how they are applied. For various major cloud storage services, we present a survey of these discrepancies. We also illustrate how to use these services effectively to construct secure data sharing, allowing for the implementation of identical data-sharing features across clouds, which is a major factor for secure multi-cloud systems.

More people accessing their data through the internet, cloud storage has become a significant aspect of sharing files today. This can be done by using sky personal file synchronization services such as Dropbox, Google Drive, Microsoft OneDrive, Box, or Ubuntu One. As evidenced by the popularity of Drop Box, which reported in April that it had reached 275 million users, these services have been tremendously successful.

These systems sharing of files using dedicated application servers that manage file access, user groups, data compression, and other functions. It implies that the file-sharing system's security necessitates the use of encryption. Libraries can share documents through Cloud free Storage.

12. Collection development

For libraries, the collection is a relatively new phenomenon. A cloud computing system can be used for collection development. Various types of collections can be found in libraries. We can upload a book collection with individual files organized by subject and upload a book collection that is split into individual files. Research papers, reports, and dissertations are also crucial. As a digital collection, libraries can construct physical study collections. The collection should be updated and digitized, which can be done via Mega dive, Dropbox, iCloud, or Google Drive. Users can use Mega Drive, Dropbox, or their Gmail account to gain access.The construction of digital libraries, corporate cataloging, storage, and sharing of resources on the virtual environment on the web are all typical applications of cloud computing in libraries.

Users' and staff's time can be saved while accessing information, and resource sharing issues are avoided. In order to make effective use of cloud computing services, librarians must be well-versed in the technology.

13. Selection of dissemination Information SDI Services

Some library visitors are limited to a single section of the information. It is a vital role that cloud computing provides in this situation. When a particular library reader's information is unavailable, he can obtain it from another library and have it delivered to his phone without having to visit the library.

14. Content Page Services

Users can see the most recent books as well as the library's contents in a digital format. Libraries can do this by uploading relevant information to Google Drive or Mega Drive and distributing it to relevant readers via relevant links or emails.

15. Conclusion

Cloud computing refers to the delivery of various services over the Internet. Digital data, servers, databases, networking, and programming, among other technologies and techniques, are among these resources. As long as an electronic gadget is connected to the internet, it has access to both data and the software applications needed to run it. Cloud computing plays an important role in enhancing library services including such repositories, document sharing, and SDI Services. The focus of the research is to discuss whether Cloud Computing can be used to improve library services. The research can be improved as far as cloud computing trends and challenges are concerned. It's a vital layer for the expansion of library services.

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