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Cloud Computing and Libraries

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Abstract

Cloud computing technology (ICT) come up as a boon for libraries and is offering various opportunities and services for libraries to connect their services with clouds. ICT have forced the libraries and librarians to change in its functioning processing of the information retrieval system. In this digital era, libraries are moving in advanced level called cloud computing. In cloud computing, the libraries not required the software, operating system and applications in the limits, which will be provided by service provider. Cloud computing offers a new importance in computing, it changes how we invent, develop, scale, update, maintain and pay for applications and infrastructure on which they are run. Cloud computing is broken down into three divisions: (1) application, (2) storage, and (3) connectivity. Each division serves a different purpose and offers different products for business, separately around the world. In this study, detail of the cloud computing origin, different types, security, issues and challenges in library science are discussed.

Keywords: *Cloud computing, SaaS, PaaS, IaaS, Information retrieval, Resources sharing internet cloud*

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INTRODUCTION

In the present scenario, web based technologies developed on essential platforms and developing large advantages and virtual paths to use their services for the different purposes. Today, cloud computing is developed as one of the most popular essential technology for libraries to deliver the services in an impressive way. The need of cloud computing may turn out due to the information explosion, problems of accessing the information, save the time of users and staff, resource sharing problems of library resource management, multiple demands of users and affection of users against cutting limit technologies. Cloud computing, where all files are hosted on a cloud composing of thousands of computers and servers, all connected each other and open to everyone via internet. In cloud computing, everything you do is now web based instead of being desktop based; in this digital age users can access their all programs and documents from any computer that's connected to the internet. Cloud computing is changing the way that institutions manage their data, due to its flexible, user demands and economical characteristic [1]. Cloud computing helps the libraries to save the money, time and resources without having software, hardware in the library premises, which are must to access the information at present. The future libraries may be in the cloud, so that libraries can focus directly.

WHAT IS CLOUD COMPUTING

The terms cloud indicates to a network or internet. In the other words, we can say that cloud is something, which is present at remote location. Cloud can provide services over networks like public networks and private networks. Application such as email, web-conferencing, patron relationship management all run in clouds [2].

Cloud computing is not a new technology that suddenly come on the web but it is a new style of computing. Cloud computing is a kind of computing technology which facilitates in sharing the resources and services over the internet quite than having these services and resources on the local server or personal devices. Cloud computing can transform the way system are built and services handed over, providing libraries with a favorable circumstance to extended their impression. Cloud computing is internet based computing where essential shared servers provide

software, infrastructure and platforms devices and other resources and hosting to customers on a pay-as-you-use basis. All information that a digitized system has to suggest is offered as a service in the cloud computing model. Users can access this service available on the internet cloud without having any previous know-how on managing the resources complicated [3].

DEFINITION OF CLOUD COMPUTING

1. According to National Institute of Standards and Technology (NIST), "Cloud Computing is a model for enabling, ubiquitous, convenient, on demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" [4].
2. According to Wikipedia, "Cloud computing is the delivery of computing as a service rather than a product, whereby shared resources, software and information are provided to computers and other devices as a utility (Like the electricity grid) over a network (typically the internet) [5].
3. According to Buyya, "Cloud computing is a parallel and distributed computing system consisting of a collection of inter-connected and virtualized computers that are dynamically provisioned and presented as one or more unified computing resources based on Service Level Agreement (SLA) established through negotiation between the service provider and consumers [6].
4. According to Gartner Group," Cloud computing as a style of computing in which massively scalable and elastic IT enabled capabilities are delivered as a service to external customers using internet technologies" [7].
5. According to the Forrester, "Cloud computing as a pool abstracted highly scalable and managed computer infrastructure capable of hosting end-customer applications and billed by consumption."

TYPES OF CLOUD

Cloud detail model helpful expert in developing of economic, extensible and representative regularity. There are following types of development of cloud.

1. *Private Cloud:* The cloud infrastructure has been deployed, and is maintained and operated for specific organization. The operation maybe in house or with a third party on the premises.
2. *Community Cloud:* The cloud infrastructure is shared by several organizations and supports a specific community that has shared concern.it maybe managed by the organizations or a third party.
3. *Public Cloud:* Public Cloud computing climate are open four use to anyone who want to sign up and use them. There are run by peddler and applications from distant users are likely to be connect as well as on the Cloud's services, storage systems and networks e.g., Google's App Engine and Amazon Web Services [8].
4. *Hybrid Cloud:* Hybrid Cloud provides digital solutions through a combine both private and public cloud models. Hybrid cloud is a private linked to one and many external cloud services. Centrally, supervise, provisioned as a single unit and restrict by a fixed network.

MODELS OF CLOUD COMPUTING SERVICES

- Software as a Services (SaaS)
- Platform as a Service (PaaS)
- Infrastructure as a Service (IaaS)

1. *Software as a service:* In these models, an entire application is offered to the user, as a service on demand. A single current of the service runs on the cloud & multiple end users are direct investment in server or software licenses, while for the provider, the cost are lowered, since only a single application needs to be hosted and controlled.
2. *Platform as a service*: Consumers purchase access to the platform, sanctioning them to arrange their own software and application in the cloud. The operating systems and network access are not managed by the customers and these

might be necessity as to which applications can be displayed [9].

3. *Infrastructure as service:* customers control and manage the system in terms of the operating system, applications, storage and network connectivity but do not themselves control the cloud infrastructure. It is the intelligently maintained to the user to enable processing, storage, networks and other fundamental computing resources where the user is able to display and run approximately software which can include operating system and application and possible limited control of select networking parts.

CHARACTERISTICS OF CLOUD COMPUTING

The National Institute of Technology describe the five essential characteristics of cloud computing. There are:

1. *On demand self-service:* A consumer can one sided supply computing potential independent such as server time and network storage, as needed automatically without requiring human communication with each service provider.
2. *Board network access:* Capabilities are available over the network and achieved through standard performances that push for use by composite thin or thick client platforms.
3. *Resource pooling:* The provider's computing resources are pooled to serve multiple consumers using a multi-talent mode, with different physical and virtual resources dynamically assigned and resigned according to customer demand.
4. *Rapid elasticity:* Capabilities can be elastically supply and released, in some cases consequently to scale ready outward and inward appropriate with demand. To the customer, the capacities available for provisioning often appear unbounded and can be deserved in any quantity and at any time.
5. *Measured service:* Cloud systems positively control and separate resource use by authority checkout capability at some level of difficulty suitable for the type of service. Resource usage can be clear for both the provider and customer of the utilized the service.

1. Electronic Document Delivery Service
2. Bulletin Board Service and Email
3. Online Search Services
4. Full Text Information
5. Really Simple Syndication
6. File Transfer
7. E-Learning
8. WWW Services

CLOUD COMPUTING IN LIBRARY SCIENCE

Nowadays we are living in the age of information. Information technology plays an important role in handling library resources limits from collections, storage, organization, processing and analysis of information dissemination. Library field facing many problems in the profession due to application of information technology. With the adventure of information technology, libraries have become automated which is the brick need towards advancement followed by networks and more effort are towards virtual libraries. Cloud computing is a completely new IT technology. It is known as the third revolution after PC and Internet in IT. The more recent technology trends in the library science is use of cloud computing of various purpose and for in library functions. Libraries are replacing their services with the attachment of cloud and networking with the facilities to access these services anywhere and anytime.

Today the concepts of traditional libraries have been changed. Introduction of new and innovative technologies like cloud computing helps libraries to provide better services to the user community. Example of libraries based on cloud computing:

- OCLC
- Library of Congress
- Columbia Public Library
- 3 Exlibris
- Polaris
- Scribed
- Discovery Service
- Google Scholar
- Worldcat

ADVANTAGES OF CLOUD COMPUTING IN LIBRARY SCIENCE

1. Cloud Computing works on demand. We can demand the service for certain period like for few days or few weeks or months.

2. Cloud computing is cost effective. Cloud services, resources, software etc. are shared by group of institution by cutting down the individual institute cost. Analyzing to the conventional methods of computing, cloud computing billing maybe comparatively low.
3. Cloud computing is eco-friendly. Since it is pay for use, model consumption of electricity will be minimum. So it helps green computing.
4. Cloud Computing is innovative and flexible. This new technology will be familiar as and when available with the services provider and the service utilized will be more flexible when comparing with the conventional competing.
5. Cloud computing have adjustable storage. In the traditional system, if the server is less than what we have, the server should be replaced with the new one. In this computing, the storage capacity can be adjusted according to the needs of library and the need of users.
6. *Cloud OPAC:* Most of the libraries in the world having catalogue over the web. These catalogues are available with their libraries local server. If the catalogue of the libraries made it available through cloud, it will be more beneficial to the users to find out the possibility of information's.
7. Relives burden of information technology staff with organization, as routine jobs being handled by service providers.

DISADVANTAGES OF CLOUD COMPUTING LIBRARY SERVICES

1. *Need of constant connectivity:* One of the major demerits of every cloud service is the need for constant connectivity with internet. The alternative bandwidth at the end might cause mistake to creep in and this is limits the use of cloud services [8].
2. *Complexity:* While cloud services quite and improve library performance. They are initially complex to understand. For that reason, employees and users have to be trained for better utilization of cloud based services.[9]
3. *Latency:* Latency and obvious issue is the time taken for the user system to interact with machine in the cloud. Cloud based apps will have higher latency than the native apps installed on a user system. There will be an added time of user extreme communication with the cloud.
4. *Security:* Cloud computing is totally internet based service. All cloud based computing uses and stock. Data using the same network which makes it accessible to attack by hackers. Departing to the cloud can actually be more secure for smaller companies offering cloud services use the latest and most developed security methods.
5. *Privacy:* Privacy lose is a big responsibility, when we talk about cloud based services. Data stored and shared on the cloud. Large social networking sites are regularly look after and can be accessed by only recognized people, but there is always a change of accidental data leakage, mismatch and other losers.

CONCLUSION

This research provides cloud computing ideas, applications, merit and demerit of cloud based services in libraries in order to improve their services in more efficient manner. No doubt, libraries are changing almost cloud computing technology in this era. Libraries taking merits of cloud based services mainly in building digital libraries, social networking and information communication. But some issues related to cloud computing like privacy, security etc. Therefore, it is time for libraries think seriously about library services with cloud based technologies and provide sincere service to their users. Another role of LIS Professionals in this digital era is to make cloud based services as a reliable medium to disseminate library services to their users.

REFERENCES

1. Shivam Singh, Shilpa Kumari. Cloud Computing: Application to Knowledge Management.
2. Gokul Adarsh N, Ambili KS. Cloud Computing and Its Application in Libraries.
3. Kaushik A, Kumar A. Application of Cloud Computing in Libraries. *International Journal of Information Dissemination and Technology*. 2013; 3(4), 270–273p.

4. Rajpal Singh Rajpurohit. Cloud Computing and its Application in Library Services. National Conference Library Information Science & Information Technology for Education. 2015.
5. Sahu Rekhraj. Cloud Computing: An Innovative Tool for Library Services. NCITE 2015.
6. Ram Nath Maurya, Jai Prakash. Cloud Computing In College Libraries. NCITE 2015.
7. Bansal Anshu. Cloud Computing and Libraries. In: National Conference Library Information Science & Information Technology for Education.
8. Aggarwal Shiveta, Aggarwal PC. Time a head in Cloud computing Inter cloud Augmentation. In: ICCLISt – 2016.
9. OSS Prasad. Using Cloud Computing In Libraries. Innovative Challenges in Information Services.

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