



PRESENT METHODS IN LIBRARY WITH CLOUD COMPUTING

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ABSTRACT:

Knowledge is the unit resource for national development. With the dawn of technology, the sharing, management, transfer of knowledge has become an easy and fast performing factor. Libraries, as we all know, are the source of knowledge to all communities. Above all, public libraries empower common man with knowledge required for his daily lives. Modern understanding of libraries has shifted towards their physical presence along with its digital presence. The same factors have reflected in public libraries that are rapidly adapting to digital resources for its library services to reach wider user community. Many public libraries are providing free e-books, e-journals and full-text databases, digital reference services (via e-mail), using social media for its services. Nearly all public libraries that were analyzed represent attractive architectural landmarks in their region. Besides offering spaces for children, the libraries provide rooms for learning and getting together and, to a lesser degree, modular working spaces. Most libraries provide Wi-Fi inside their buildings; more than half of those were investigated work with RFID technology (Mainka, 2013).

Keywords: Cloud, RFID, Library, Scientific

2. Cloud Computing

Cloud computing" (CC) is a term for networked computers that deliver IT services over the internet to many users in an on-demand environment. The type of services range from adaptations of familiar tools to address customers' various needs, ranging from scientific research to e-commerce. Commercial and individual cloud computing services are already available from Amazon, Yahoo, Salesforce, Desktop Two, Zimdesk, and Sun Secure Global Desktop, while Google's efforts in cloud computing have attracted a great deal of interest (Delaney and Vara, 2007; Naone, 2007). Institutions can pay some Cloud Service Providers a usage fee and get the functionality of a system [without having] to own it; there is no need to buy hardware and software licenses and pay for maintenance.

"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". (NIST Special Publication 800-145, Jan 2011).



3. Literature Review

In 1960, John McCarthy, a computer scientist, noted that "computation may someday be organized as a public utility". It is here that the foundation of cloud computing was laid. (Abidi & Abidi, 2012).

Cloud Computing provides shared access and wider usability (Kaur, 2014). The main use of cloud services by libraries is either taking advantage of freely available applications for internal use in the library or for social networking purposes within their own community computing in libraries based on SWOT analysis and pointed out the Strengths, Weaknesses, Opportunities, and Threats associated with libraries and cloud computing. Goldner (2011) identified how cloud computing is different from the other computing and its advantages to libraries in three basic areas: Technology, data and community. Murley (2009) outlined cloud computing and listed of services and resources in Law libraries. Cloud computing technology like Online Computer Library Center (OCLC) services are developed on the web in order to provide the anywhere and anytime access to library services (Jordan, 2011). Cloud Computing is the Wave of the Future (Perera, 2009).

4. Cloud Computing- Need and Significance

Jeff Bezos of Amazon has repeatedly spoken of the 70/30 rule. He states that it can be demonstrated that businesses which run applications spend 70% of their time and money supporting the infrastructure required to keep their business going. This only leaves them 30% of time and money to work on innovation and ways to improve and grow their business. He goes on to show that when a business moves their core applications to a cloud-based solution, they can invert this ratio thus giving them 70% of their time and money to improve and grow their business (Goldner, 2010).

The libraries along with user-centered technological development are facing predicament on how to provide the most efficient library services to support data-powered decision-making. Currently most libraries are dealing with dwindling budgets, inadequate staff, and greater intricacy in technological library based solutions. As a result, libraries are increasingly required to turn towards the cloud computing solutions to fulfill their technological needs. Cloud services offer new opportunities of best data management, cost savings, and flexibility. These cloud services are typically provided by third parties who have built robust solutions to help libraries deliver resources, services, and expertise efficiently, and encourage patrons to participate in a network that



empowers them to socialize and leverage the power of the community of users (Goldner, 2010; Breeding, 2012; Zimmer, 2015). Some of the other factors that support the need of using Cloud Computing are: information explosion, lesser space, higher server maintenance cost, information security, easy resource sharing, lesser energy consumption etc.

5. Cloud Computing possibilities in Public Libraries

Public libraries can provide access to various resources, computer applications and services to users from a single platform using cloud computing. Some of the possibilities are listed below:

Public Library resources can be stored, accessed and preserved in cloud for anywhere, anytime access collaboration and resource sharing among cooperating public libraries can be carried out easily. Collaboration is another key benefit, among public libraries. Liz Van Halsema, marketing content writer at Sirsi Dynix, observed that "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".

Library 2.0 based services using social networking can be provided to general public who are dispersed in wide physical space (eg. Facebook, Twitter)

Unified catalogs of all public libraries can be accessed through cloud, eg. Worldcat. Cloud-based access to Public library resources through the online catalog (OPAC) that is part of the library's integrated library management system will be very promising. OPACs can also be superimposed with cloud based recommender systems or front-ends to make them more user-friendly.

Research information can be provided using cloud services like Mendeley, Research Gate etc. Cloud based Citation management software can help as a platform for resource sharing content, create communities on research topics. Mendeley offers online citation management.

Large Public Digital Libraries can be created where resources can be stored in cloud (eg. Dropbox). Document Collaboration for office based digital workflow applications is possible through Teamlab, Drop box, Workshare etc. Also, (Public) Digital library can reduce the cost of hardware and maintenance cost through the use of Dura Cloud services.

More multimedia resources (Eg. Youtube) based services can be provided



Remote access (at home) of e-resources can be provided to public library users using cloud technology like Remotexs

Public library consortiums can provide hardware and software services through Cloud services providers like Ex Libris.

Heritage resources at the public libraries can be digitally stored using cloud based digital preservation tools like Portico, LOCKSS, CLOCKSS etc.

Virtual conferencing software can bring public library staff, users and fund providers together who are located in various locations. Online web conferencing services let anyone meet and collaborate online in real time. Eg.: Citrix Online GoToWebinar, ReadyTalk, Skype, WebEx

Scholarly communication can be managed electronically. Third Iron allows researchers to browse and also to save any new journal through BrowZine service.

Mobile apps are valuable to cloud-based library data. Where the WorldCat mobile website aims to guide users to nearest public library by mashing-up data from library locations WorldCat collections and user locations.

The shelf-mapping software- StackMap maps physical location of a book in the public library. It is based on a pre-recorded call number range. Unlike RFID, this service is less dynamic but however quite useful.

Public Libraries with technology oriented staff can use Amazon's Elastic Compute Cloud (EC2) platform to implement the virtual servers.

A robust centralized online knowledgebase can be created by a Central Public library for wide usage by its branch public libraries as a single integrated collection management.

Public libraries can detach themselves from the traditional reference desks and adopt to latest technology based tools i.e. mobile devices, tablets, and computers for online cloud oriented reference services.

CRM databases can be a possible mode to collect all the public library branches' shared associations to one place, i.e. bringing all volunteers, donors, funding agencies and beneficiaries to a single platform to improve and streamline all transactions. Eg.: SugarCRM, Salesforce, Zoho CRM, Microsoft Dynamics CRM Online, CiviCRM.

6. Recent Trends



A number of universities, vendors and government organizations are investing in research around the topic of cloud computing. In July 2008, HP, Intel Corporation and Yahoo! announced the creation of a global, multi-data center, open source test bed, called Open Cirrus designed to encourage research into all aspects of cloud computing, service and data center management.

7. Cloud Computing in India

NASSCOM research report entitled "Deconstructing the Cloud: The New Growth Frontier for Indian IT-BPO Sector". The study reveals that, cloud computing is expected to have a significant impact on the services industry, in terms of services offered, delivery mechanisms and business models. The Indian market for cloud computing is expected to grow by \$16 billion in 2020. In Indian Libraries, implementation of cloud computing is still not done. But it can be proven beneficial due to its cost effectiveness and effective service and thus can help to give new outlook to Indian Libraries.

8. Conclusion

So Cloud computing is the one point solution to get all updated software, Apps with low cost and less maintain and without about data, document scattering. Now is the time to look to the cloud for mobile solution in libraries. Cloud Computing is indeed an accelerating technology. However it has few issues regarding security. Also it seems to be nascent and yet to be explored more for innumerable possibilities. Government Technology Research Alliance (GTRA) research showed that the most common concern about implementing Cloud Computing technology was security. The real value of cloud computing is that it makes public library data & software transparently available everywhere. As we all know, in India, where digital divide is dominant, with cloud technology at public libraries we can reach all users at remote locations who are in need of more educational and informational services.

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