CLOUD COMPUTING: A NEW PARADIGM FOR E-LIBRARY

[1]Dr. Atul Gosai, [2]Mr. Rushi Raval

[1]Assistant Professor, Department of Comp Sci., Saurashtra University, Rajkot, Gujarat,
[2]Assistant Professor, Department of M.Sc. (IT&CA), GK&CK Bosamia College, Jetpur,

atul.gosai@gmail.com, rushionline@ymail.com

ABSTRACT : *Now-a-days concept of cloud compute is very booming as well as for e-libraries become very popular for institutes, colleges and universities aspect. Even more universities, colleges, and institutes of countries which are affected by recessions started recognizing that by power of cloud computing fast access to data will enhancing their efficacy, and productivity. Data and information's about e-libraries can be placed in the cloud world. In this paper we are going through means of cloud computing, pros, cons, different types of cloud computing, virtual clouding, impact on e-libraries, e-libraries which are using cloud compute power, security concerns etc. E-library called in simple manner like "a libraries without roofs".*

KEYWORDS: cloud computing, impact on e-library, security issues, resource management.

1. INTRODUCTION

Cloud computing is one of the booming factoring in today's IT industries as well as for educational field. According to top PC Magazines, Tech Encyclopaedias, clouds generally refer to WANs such as the internet. Term Cloud computing is used to describes web based operating systems and Sharing of data through the internet. These concepts become famous from past few years. Cloud computing allows consumers and businesses to use application without installation and access their personal files or data at any computer with use of internet access. Its acceptance is growing manner in very quickly. It is newly emerged method in which is broadly used in IT industries. Which has shown new horizons to knowledge based societies. It is also cost effective. We can access data from anywhere and anytime in the world.

Figure 1: cloud-computing

2 CLOUD COMPUTING MODELS (CCM)

Cloud computing models have gone a through number of phases. It is new way of internet terminology. Foremost advantages of cloud computing is that you will pay for what you are going to use or using services or resources. It shares features such as with the automatic computing, grid computing, parallel computing and distributed computing, virtual computing, cluster computing. It will be offers software, infrastructure and platform as service.

1. Cloud Software-as-a- service (SaaS)
2. Cloud Platform-as-a- service (PaaS)
3. Cloud Infrastructures-as-a-service (IaaS)

Cloud Software as Service (SaaS)

In S.A.A.S service, software's is deployed on internet by S.A.A.S providers and subscriber can subscribe for software's and develop applications using that software's. S.A.A.S users no need to install or purchased any software's, S.A.A.S users only needs to subscribed and use that software's. Google docs, net suite are example for the S.A.A.S Services.

Cloud Platform as Service (PaaS)

Cloud platform-as-a-service provides platform for creating, building, deploying and running you r web app on internet. Customers no need to download or installing any software's. P.A.A.S Developers easily develop applications and easily deploy on Internet as well. So that applications can easily accessible globally, e.g., of P.A.A.S services are GoogleApp engine services, "Windows azure" platform from MS, and sales-force.

Cloud Infrastructure as Service (IaaS)

I.A.A.S is an impermanent model in which an organization outsources the stuff or hardware's used to support operations likely as daily basis, including storage, h/w, and a servers, different networking components. Infrastructure-as-a-Service (I.A.A.S) is the mechanism for delivery of computer

infrastructure as service. The service provider owns the hardware's and is responsible for wrapping, running and maintaining it. The client's typically pays on like as per day-use, hourly-use basis. This cloud model is sometimes also referred as Hardware-as- a -service. Examples of I.A.A.S are Right scale go grid, GoogleApp engine, amazon WS, and Rack space. It is newly outcomes and emerging method which is mostly using in IT fields which has publicized new vistas to the knowledge based societies, I.A.A.S is characteristically a platform of virtualization environment. This cloud model is also providing services over the internet base.

3. TYPES OF CLOUD COMPUTING

Mostly there are 2 types of cloud computing as shown below.
1. Public cloud
2. Private cloud
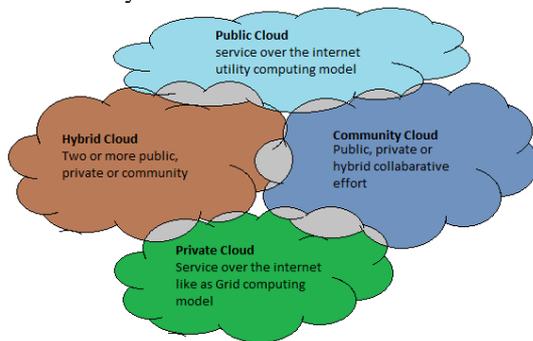3. Hybrid cloud (Public + Private Cloud)
4. Community cloud

Figure 2: types of cloud computing

A. Public cloud

A public cloud, which is selling the services to anyone through the internet medium, Amazon-EC2, MS Window Azure, Google/App engine are one of the public cloud providers examples. Customer has no ideas about information's location which are stored on the cloud environment. Infrastructures are just sharing basis among those organizations.

B. Private cloud

This one is differ from public cloud environment, because it provides data to limited number of peoples or you can say it has limited resource persons. Private clouds are become an expensive but it is considering much more secured than public cloud services. Eye-OS, sales-force, are one of the private cloud providers.

C. Hybrid cloud

It is a combination's of public and private cloud services. It has adopted features of both public clouding plus private clouding services. In this type of clouds delicate data's which has limited resource persons is stored in private clouding services and other data or information's which is giving to publicly is stored in public clouding services.

D. Community cloud

A community cloud services in cloud computing is a collaborative efforts in which infrastructures is share between several organizations from a specific communities like as socials, security, and jurisdictions, with common concerns. Sometimes it was managed by internally or a third-party views and hosted by internally or externally part for various purpose.

4. VIRTUAL PRIVATE CLOUD

When service providers using public clouding resources to create their own private cloud computing. This result is converting to as virtual private cloud model [19].
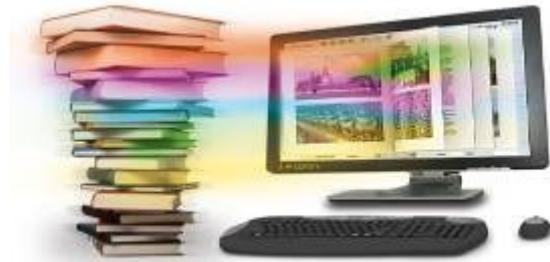
Cloud computing for e-library

Figure 3: cloud computing for e-library [18]

There is a vast thing to deploy information's or data on internet after all when we talking about e-library. E-library is an advanced version of a library, in e-library concept there are lots several of resources have been ready to use reading a books for different kind of users and also provide speed and capacity to download and upload there books and assignments stuffs, etc.

Pros of Cloud computing system in E-Libraries: In cloud computing data is saved into cloud environments. Whatever we are doing on computer likely for even on MS word application is saved through internet. So it becomes new paradigm of computer applications or systems. [13] [14]
1. It will concern an economical thing. We can pay in installments basis also. 2. Capacity is increased as compare to local servers and local frameworks. We can store more data and information's. 3. Information's can be retrieved from anywhere and anytime or you can say round the clock availability through the using of internet medium. 4. We need not to keep our software's and application packages updated or upgraded. It saves lots of our time and also releases from licensing issues. 5. Users will not be getting experience delays while working on computer applications or systems. 6. Its provided automatic updates for particular platform as well as for software, via internet basis. 7. Save the user's time a lot. 8. Multiple accesses are also possible with this kind of paradigm. 9. E-library is a solution for library which is a growing organism. 10. It can access universally. 11. Every person his or her book at a same time via the resource sharing.

Cons of Cloud computing system in E-Libraries: One of the leading cons of using cloud computing is in the e-libraries internet connection is must be implement.

1. If internet connection is going down it will become impossible to work without internet connection.
2. Data you stored on the internet is more secured in the cloud environment as compare to local machines or systems.
3. High speed connection is required if you are reading large contents.
4. Data is an existing on the other server there is no direct control at where u r data is actually present-day. There is a dangers thing which is concerned with privacy issues.
5. Users have to at least getting knowledge about the internet terminologies.

5. EXAMPLES OF E-LIBRARIES WHERE CLOUD COMPUTING IS USED

If 1 have already works with web2 technologies above the earlier some years (e.g. Gmail, Wikimedia, Wikipedia, Google etc.) In today scenarios, as we 'r alive in the period of budget limitations as we have been seen cost cutting view everywhere. Thus, cloud computing system we will say is an economical way because now we are in world of information technologies, e-libraries, and digital-libraries is a cost-effective way. Now-a-days, many businesses are providing cloud hosted versions to e-libraries.

A digital library is a library in which number of collection are stored in digital formats (like as opposed to print, microform, or other form of media), and accessible by computer systems. The context may be stored locally, or access via remotely. The 1st published use of the term may have been in a year of 1988 report to the Corporation for National Research Initiatives. The term was 1st promoted by the N.S.F. / D.A.R.P.A. / N.A.S.A Digital libraries initiative in year of 1994.

Digital Library of India: This organization is jointly managed and host by Indian Institute of Sci., Bangalore in co-operation with C.M.U, N.S.F, E.R.N.E.T, I.I.I.T, and M.C.I.T for the Govt. of India and 21 participating centers. Furthermore, it will provide a list of books only those who have copyright protected books.

O.C.L.C: (Online Computer Library Centre): It is a non-profitable, computer library services, member ship based. O.C.L.C offers also hands to other venders also and started giving L.I.S. tool that they complement WORLD C.A.T. and First Search. Libraries started building and managing there on data centers. They adopt hybrid cloud computing system for their own usage.

I.S.A.C.A (Information Systems Audit and Control Association): It is also an in dependent, non-profitable, globally association, I.S.A.C.A engages with the development, implementation and use of globally accepted, and practices for information systems.

nlist.inflibnet: This Project is entitled as "National Library and Information Services Infrastructure for Erudite Content", being jointly executed by the U.G.C.-INFONET Digital Library Association, INFLIBNET Centre and the INDEST-A.I.C.T.E. Syndicate, I.I.T. Delhi provide for 1) cross-subscription to e-resources subscribed by the 2 Groupings, i.e. subscription to INDEST-A.I.C.T.E. resources for the universities and U.G.C.-INFONET resources for the technical institutions; and 2) access to selective e-resources to the colleges also. The N.-L.I.S.T. project provides access to e-resources to students, researchers and faculty from different colleges at different regions and other beneficiary institutions through server's installed at the INFLIBNET Centres. The authorized users, which are coming from college's can now access e-resources as well as download articles; books required by them directly from the publisher's website once they are duly authenticated as authorized users through server's deployed at the INFLIBNET Centres.

E-Library Thing: E-Library thing is one of sites brings together aspects of education as well as cloud computing services. It augments u r e-library catalogue with the power of latest web2, E-library thing is a kind of service. It offers different catalogue enhancements packages, book recommendations; tag cloud for e-books, tag based searching. E-library things for building a libraries world's largest personnel and social cataloguing site, [13]

Figure 4: [Image taken from e-library center from Bosamia College Jetpur] [20]

Amazon and Google: These are also one of the leading centers also providing solutions for e-libraries by having partnership between library automation centers. We will pay to the service providers for what is used by us.

Google for years is working from years working for dissemination of information also taking interest in e-library solutions like, Google provide "GoogleBooks" [12], IBM company have developed infrastructure known as "blue cloud" [14] "Terrapod" is an example of video Digital library, where user can use resources in the form of videos [15] The Library of the Indian Institute of Science (I.I.Sc.) Bangalore, built out of grants U.G.C. JRD Tata Memorial Library also known as regional center for mathematics [16], Mobile Me is provided by an Apple.

List of E-Libraries projects from India

Name	Description
Digital Library of India	The principal benefit of the Universal Library will be to supplement the formal education system by making knowledge available to anyone who can read and has access [22]
Traditional knowledge digital library	Repository of the traditional knowledge of India [23]
Universal digital library	A book digitization project, managed by Carnegie Mellon University School of Computer Sci. and University Libraries. Works with government and researcher partners in India (Digital Library of India) and also from china, this project's aim is providing scanning books in many languages, using O.C.R technology to enable full text searching features, and provides free-to-read access to the books trough the web resource. [24]

Table 1: [List access from Wikipedia] [18]

6. CONCLUSION

We will say cloud computing service is a fiery topic which is giving new dimensions to computer systems. It is vital for e-libraries due to various reasons important part of cloud computing environment are known as the front-end and back-end, front part is seen by computer users and back-end is cloud services, itself. Cloud computing service is useful in e-library as well as for information sciences. We can access data and information's from anywhere at any time scenario. Its services are available from remotely. It helps in renovating data centers so we can say cloud computing services is like uprising in the field of e-library, IT fields, and as well as for information services area.

7. REFERENCES

[1] Rajkumar Buyya , Chee. Shin. Yeo , Srikumar. Venugopal , James. Broberg , Ivona. Br, "Cloud Computing and Emerging IT Platforms Vision, Hype, and Reality for Delivering Computing as the 5th Utility", access via http://www.scincedirect.com/

[2] B. Hay, K. Nance, and M. Bishop., "Storm Clouds Rising: Security Challenges for IAAS Cloud Computing", "Proceedings of the 44th Hawaii International Conference on System Sciences", pp. 1-7 (Jan. 2011). nob.cs.ucdavis.edu/bishop/papers/2011-hicss-1/iaas.pdf.

[3] A. Saravag, Dr. Chander. Kant, "Cloud Computing – The Next Generation Computing", IJCSC, vol.2, no.1, jan-june 2011, pp. 207-209.

[4] R.-Anandhi, G.-Sekar, "Cloud Computing- A Closer Look", "www.ijcsi.org/issues.php/papers/.../IJCSI-8-5-1-452-461.pdf"

[5] Vikas. Goyal, Dr. Chander. Kant, International Journal of Engineering Sciences, ISSN: 2229-6913, September 2011, 4, pp. 274-282. "Security Issues for Cloud Computing".

[6] Popovic, Kresimir. Hocenski, and Zeljko, The Paper Appears in: MIPRO, 2010 Proceedings of the 33rd International Convention Date: 24-28 May 2010 page(s): 344-349 Print ISBN: 978-1-4244-7763-0 Date of Current Version: 29 July 2010 "Cloud Computing Security Issues and Challenges".

[7] M. Casassa-Mont, S. Pearson and P. Bramhall, Proc., "Towards Accountable Management of Identity and Privacy: Sticky Policies and Enforceable Tracing Services", DEXA 2003, IEEE Computer Society, 2003, pg. 377-382.

[8] D. Catteddu and Giles Hogben: "European Network and Information Security Agency", Nov. 2009, http//www.enisa.europa.eu/act/rm/files/deliverables/cloud-computing-risk-assessment.

[9] Gartner, "Cloud Computing Will be as Influential as e-business", Gartner, Tech. Rep., 2013. [Online].

[10] Wikipedia, 27 February 2013, http://en.wikipedia.org/wiki/Risk_assessment.

[11] ISACA, accessed at https://www.isaca.org/Pages/default.aspx (2013)

[12] Google books accessed via, http://books.google.com (2013)

[13] Cloud computing is used for library things, accessed from www.csjournals.com/IJITKM/PDF%205-2/30_Rajni_Bala.pdf

[14] INTERNATIONAL RESEARCH: JOURNAL OF LIBRARY AND INFORMATION SCIENCE (Vol.1 No.2, Dec.2011)

[15] 'Terrapod' accessed via http://www.terrapodcast.com (2013)

[16] JRD Tata Memorial Library accessed via http://www.library.iisc.ernet.in (2013)

[17] Carnegie Mellon University accessed via http://www.ulib.org (2013)

[18] List of E-libraries projects from India accessed from http://en.wikipedia.org/wiki/Digital_library (2013)

[19] Image resource accessed from http://www.punesite.com/modern-college-to-get-e-library-soon.html (2013)

[20] Virtualization concept as platform or hardware, access via, http://en.wikipedia.org/platform_virtualization (2013)

[21] E-library at college level, context access via, http://bosamiacollege.org (2013)

[22] Digital library of India, accessed by, http://www.dli.ernet.in/ (2013)

[23] Traditional. Knowledge digital library of India, accessed via, http://www.tkdl.res.in/tkdl/langdefault/common/Home.asp?GL=Eng (2013)

[24] Universal digital library, accessed via, http://www.ulib.org/ (2013)