Study on Various Impact on Digital Library with respect to Cloud Computing.

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Abstract :-

Cloud computing and web collaboration are shaping twenty first century libraries and both the developments seem to be behind the newest developments in digital library services which are driving library automation. This paper discusses some of the basics of cloud computing with the aim of introducing aspects with its challenges and risks of the model, types in the model, advantages and disadvantages of the model.

Keywords: - *Cloud computing; cloud Models, Community cloud, Hybrid cloud, Private cloud.*

I. INTRODUCTION :

This paper discusses some of the basics of cloud computing with the aim of introducing aspects such as: challenges and risks of the model, types in the model, advantages and disadvantages of the model. Cloud computing is not an exception in changing the world. Cloud computing provides us virtually unlimited and on-demand computing resources. The study aims to provide a means of understanding the mode! and exploring options available for complementing the technology and infrastructure needs. It also highlights the libraries in the environment of cloud computing with their challenges security. Cloud Computing, Cloud Models, Hybrid Cloud, Community Cloud, Private Cloud BPl. Introduction Cloud computing is a computing paradigm, where a large pool of systems are connected in private or public networks, to provide dynamically scalable infrastructure for application, data and file storage. In this .technology, information is permanently stored on the internet servers and it can be cached by the users temporarily. The cloud application is created using resources from more than one service and from more than one location. It is a subscription-based service where a person can obtain networked storage space and ' computer resources. We can understand it with the example of a person's experience with email. If his email - client is rediffmail , yahoomail,Gmail etc, and he want to access his email firstly, he opens the web browser then goes to the email client, and log in. The most important part of the equation is having internet access. His email is not housed on his physical computer; he can access it through an internet connection, and access it anywhere. At any place he can check his email as long as he has access to the internet. His email is different than software installed on his computer, such as a word processing program. When he creates a document using word processing software, that document stays on the device he used to make it unless he physically : moves it. An email client is similar to how cloud computing works. Except instead of accessing just your email, you can choose what information you have access to within the cloud.

Cloud computing has large prospective for libraries. Libraries may put more and more contents into the cloud. Using cloud computing user would be able to browse a physical shelf of books, CDs or DVDs or choose to take

out an item or scan a bar code into his mobile device. All historical and rare documents would be scanned into a comprehensive, easily searchable database and would be accessible to any researcher. Many libraries already have online catalogues and share bibliographic data with OCLC. More frequent online catalogues are linked to consortium that share resources.

II. Review of Literature :

Padhy and Mahapatra [2012) describes in their study that the basic principle of cloud computing entails the reduction of in-house data centre and the delegation of a portion or all of the information technology infrastructure capability to a third party. Universities and Colleges are the core of innovation through their advanced research and development. Subsequently, Higher Institutions may benefit greatly by harnessing the power of cloud computing, including ccst cutting as well as all the different types of cloud services. They also discuss problems faced with digital library and development efforts to overcome that problem. Sanchati and Kulkarni [2011) found in their study that cloud computing is still in the initial stage now, impacts brought by cloud computing are obvious. With the introduction of cloud computing to 59th ILA International Conference on Managing Libraries in the Changing Information World: From Surviving to Thriving |2014university library, services of libraries will have a new rise in the near future. Services provided by libraries will become more user-centric, more professional and more effective, etc. The cloud computing techniques and methods applied to digital libraries, not only can improve the utilization rate of resources to address the imbalance in development between regions, but also can make more extensive use of cloud computing to our work life. Xiaona [2010) described cloud computing and analyzed the current status of user service models in university libraries. Then he proposed to improve current user service model with cloud computing and forward the bright prospect of user service models based on Cloud Computing.

III. Types of Cloud Computing

As a home user or small business owner, you will most likely use public cloud services. There are different types of clouds that you can subscribe to depending on your needs.

• **Public Cloud**- In public cloud a core infrastructure made available to and shared by many. It can be accessed by any subscriber with an internet connection and access to the cloud space. Its applications, storage, and other resources are made available to the general public by a service provider. For example the Internet and Public Switched Telephone Network (PSTN) etc.

• **Private Cloud-** A private cloud is established for a specific group or organization and limits access to just that group. It is cloud infrastructure operated solely for a single organization, whether managed internally or by a third-party and hosted internally or externally. Infrastructure can be on- or off-premise. It is built exclusively for a single enterprise. There are two variations to a private cloud:•

• On-premise Private Cloudy It is hosted within one's own data center. It is best suited for applications which require complete control and configurability of the infrastructure and security

• Externally hosted Private Cloud: It is hosted externally with a cloud provider, where the provider facilitates an exclusive cloud environment with full guarantee of privacy. Suited for enterprises that don't prefer a public

cloud due to sharing of physical resources.

Hybrid Cloud- Hybrid cloud is a composition of two or more clouds that remains unique entities but are bound together, offering the benefits of multiple deployment models. It combines both public and private cloud models. In this, service providers can utilize third party cloud providers in a full or partial manner thus increasing the flexibility of computing. Its environment is capable of providing on-demand, externally provisioned scale.

- Community Cloud- It shares infrastructure between several organizations from a specific community with common concerns i.e. security, compliance, jurisdiction etc., whether managed internally or by a third-party and hosted internally or externally.

IV. Cloud Computing and Libraries. :-

Libraries have been using some cloud computing services for over a decade. Online databases are accessed as cloud applications. Large union catalogs can also be defined as cloud applications. The library community can apply the concept of cloud computing to strengthen the power of cooperation and to build a significant, unified presence on the web. This approach to computing can help libraries save time and money while simplifying work flows.

If a person used any of the popular web 2.0 services over the past few years (e.g. Gmail, Wikipedia, Flicker or Twitter), then he already have some experience with cloud computing, since most of these applications are hosted in the large online data centers libraries that are the hallmark of cloud computing, Like water and electricity, a computing cloud is a communally-shared resource that you lease on a metered basis, paying for as little or as much as you need, when you need it. A brief list of potential areas of improvement could include most library computer systems are built on pre-web technology. Systems distributed across the net using pre-web technology are harder and more costly to integrate. Information seekers work in common web environments and distributed systems make it difficult to get the library into their workflow.

Benefits of Cloud Computing in Libraries :-

Cloud computing is the most cost efficient method to use, maintain and upgrade. It is available at much cheaper rates. It allows us to customize our options with great ease. Hence, we can handpick just those services and software applications that we think will best suit our particular library. Since all the data is stored in the cloud, backing it up and restoring the same is relatively much easier than storing the same on a physical device. Hence, this makes the entire process of backup and recovery much simpler than other traditional methods of data storage in the libraries. If any library registers them in the cloud then anyone can access the information anywhere with the availability of internet connection storing information in the cloud gives the unlimited storage capacity. It provides users with immediate access to a broad range of resources and applications hosted in the infrastructure of another organization via a web service interface.

Following effects of cloud computing will probably impact libraries and other sized organizations:

- ***Cost savings:-*** Cloud computing offers price savings due to economies of scale and the fact that we are only paying for the resources you actually use.

- ***Flexibility and innovation:-*** Libraries do not have to decide between devoting their limited server resources to the OPAC's overflow traffic and a new mobile web application that one of your colleagues wants to develop. If they are both hosted in the cloud, the resources devoted to each will shrink and expand as traffic rises and drops.

- ***General IT skills: -*** System librarians have to manage complex projects and evaluate competing vendors on a variety of criteria. Holding vendors accountable is especially important when they manage a significant chunk of our online data and IT infrastructure. Therefore, as long as cloud security remains a significant concern, techies may be called upon to help write binding, enforceable contracts that hold vendors to certain standards with regards to reliability and security of their services.

- **Cloud OPAC :-** Over the past year, more and more vendors have started offering cloud-hosted versions of their products. OCLC joined several other vendors last year when they began offering a cloud-based tool that complement their existing cataloguing tools [e.g. World Cat and First Search).

V. *C*loud Computing Challenges / Security :-

- ***Data Protection;-*** Data Security is a crucial element that warrants scrutiny. Enterprises are reluctant to buy an assurance of business data security from vendors. They fear losing data to competition and the data confidentiality of consumers. In the cloud model, Service providers are responsible for maintaining data security and enterprises would have to rely on them. ***Data Recovery and Availability: -*** All business applications have service level agreements that are stringently followed. Operational teams play a key role in management of service level agreements and maintenance of applications. In production environments, operational teams support:

  - Appropriate clustering and Fail over
  - Data Replication
  - System monitoring
  - Maintenance (Runtime Governance)
  - Disaster recovery
  - Capacity and performance management

- ***Management Capabilities:-*** There is huge potential to improve on the scalability and load balancing features provided today. The Scaling offerings and maintaining sufficient performance is a challenge, especially for software as a service provider, who must deliver over networks and environments that they do not necessarily control.

- ***Regulatory and Compliance Restrictions:-*** Many industries and countries disallow data or asset transparency. Also, some cloud providers have had outages with disastrous results, so trust remains an issue. In order to meet such requirements, cloud providers need to setup a data center or a storage site exclusively within the country to comply with regulations. Having such an infrastructure may not always be feasible and is a big challenge for cloud providers.

- ***Federation and Interoperability: -*** IT functions typically automate a contiguous business process -and will thus require service integration among cloud providers.

- ***Vendor lock-in and Data Management*:** Data ownership in the cloud is not clear cut. Nor is the process by which data is to be reclaimed from cloud provider systems.
- ***Technical Issues:-*** Though, it is true that information and data on the cloud can be accessed anytime and from anywhere at all, there are times when this system can have some serious dysfunction. We should be aware of the fact that this technology is always prone to outages and other technical issues. Even the best cloud service providers run into this kind of trouble, in spite of keeping up high standards of maintenance. Besides, we will need a very good internet connection to be logged onto the server at all times.
- ***Prone to Attack: -*** Storing information in the cloud could make your company vulnerable to external hack attacks and threats. As you are well aware, nothing on the internet is completely secure and hence, there is always the lurking possibility of stealth of sensitive data.

VI. Conclusion :-

The cloud provides many options for the everyday computer user as well as large and small businesses. However, with this increased ease also come drawbacks. We have less control over who has access to our information and little or no knowledge of where it is stored. We also must be aware of the security risks of having data stored on the cloud. Cloud computing is one avenue for this move into the future. It can bring several benefits for libraries and give them a different future.

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