Chapter 21
A New Framework for Building Academic Library through Cloud Computing

Vijay Parashar
Mody Institute of Technology & Science, India

Mohan Lal Vishwakarma
Mody Institute of Technology & Science, India

Reema Parashar
Mody Institute of Technology & Science, India

ABSTRACT

Libraries all over the world suffer from common problems like flexibility associated with digital data, lower levels of efficiency, and costs involved in managing the entire IT infrastructure. Few options are available in collaborating with other libraries, which is the prime reason for subordinate levels of efficiency. For the past 20 years the use of Information Communication Technology (ICT) has fundamentally changed the practices and procedures of nearly all forms of endeavor within business and governance. Within education, ICT has begun to have a presence, but the cost of ICT is not affordable. The basic principle of cloud computing entails the reduction of in-house data centres 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. Cloud computing would help in bridging the gap between academic libraries and ICT. Sharing of data among the libraries will in principle reduce the overall cost and increase efficiency. Capital expenditure done on infrastructure will chiefly be converted into operational expenditure. It will also enhance the user's experience and will help in making the libraries a lot more scalable. In this chapter the authors discuss problems faced with academic libraries and development efforts to overcome that problem. Then they propose to improve current user service model with cloud computing.

INTRODUCTION

Cloud computing is a technology that uses the Web (Internet) and central remote servers to maintain data, software, and application. Cloud computing allows users to use applications without installation in their local machine to access their personal and official files on any computer with Internet access. This technology allows users to access much more efficient computing by centralizing storage, memory and processing. This is not a new technology; it's associated with inception of the Web. In the libraries cloud computing is used to build a digital library and to automate housekeeping operations using third party services, software and hardware. Cloud computing refers to both applications delivered as a service over the Internet and the systems software in the data centers that provide services. In simple words the datacenters, hardware, and systems software is what we can call a cloud. A simple example of cloud computing is Yahoo mail, Gmail, and so forth. One does not need any software or server to store them. These services are free to all users till some limit, any extra storage capacity and advanced services are available at cost.

CLOUD COMPUTING

Various definitions and interpretations of 'Cloud 'and 'Cloud computing' exist and some of them are:

Internet based computing in which large group of remote servers are networked so as to allow sharing of data-processing tasks, centralized data storage and online access computer service or resources. (Dictionary.com, n.d.)

Cloud computing is a general term for anything that involves delivering hosted services over the Internet. These services are broadly divided into three categories: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS). The name cloud computing was inspired by the cloud symbol that's often used to represent the Internet in flowcharts and diagrams. (Search cloud computing, n.d.)

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. This cloud model is composed of five essential characteristics, three service models, and four deployment models. (Mell & Grance, 2009)

Cloud computing means cloud based networking environment. Cloud computing contains a set of a software and hardware resources that are available on the Internet and its services are managed by third-party. These services provide access to advanced software applications and highly configured servers. The service provider performs the role of consultant. Cloud computing is a Web based computing where shared resources, applications, and information are provided to the set of computers and other devices on demand using Web technology. Cloud computing is based on Internet; generally the Internet is commonly visualized as a cloud. Therefore, the process of cloud computing is being done through set of Web enabled applications loaded on the server with proper access rights. KPMG breaks this into essentially four different types of cloud computing: infrastructure, platform, applications, and services. To put this in more concrete terms, examples of each can be seen in Table 1.

Cloud computing can be understood as a way to use off-site computer processing power to replace content creation and servers that were traditionally hosted onsite. In layman's terms this means "using Web services for our computing needs" (Kroski, 2009). Cloud computer allows content

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