

Implementation of Cloud Computing in NHEI Libraries

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Abstract

The Academic Libraries are all big/small buildings and managing their own information centers. The challenging point is provisioning and maintenance of infrastructure for the digital library based on web applications. To outcome these challenges we have to apply e-learning system as a product of modern in progression technology to implement education modernization. Through the cloud computing technology and features of e-learning technology, faculty members can involve in the e-learning process of students explicitly. Researcher highlights the role of cloud computing in libraries, selection of infrastructure, concerns, and limitations that need to address in order to the implementation of cloud computing in academic libraries, optimize the benefits of cloud computing to the virtualization of libraries. The model of this paper would be carried out at New Horizon Educational Institutions.

Keywords: Cloud Computing, Network Security, Virtualization, NHEI Libraries

I. INTRODUCTION

Cloud computing, also known as 'on-demand computing', is a kind of Internet-based Computing, where shared resources, data, and information are provided with computers and other devices on-demand. It is a model for enabling everywhere, on-demand access to a shared pool of configurable computing resources. Cloud Computing seems to offer some incredible benefits for communicators. The availability of software applications, quick processing, unlimited storage, and the ability to easily share and process information².

The Library is a growing organism. Automation is a technique to make a system automated, i.e. self-service. A properly computerized library will help its user with quick and prompt mainly by computerization. This library automation the repetitive and clerical job involved in the function and services of the libraries. Now the computers have become capable of introducing in operations, processes, techniques and methods of the library. It concludes that the system like a library though it is fast moving, we can achieve high-grade performance².

II. ROLE OF CLOUD COMPUTING IN LIBRARIES

Cloud computing is a completely new in technology and it is known as the third revolution after the PC and Internet. Cloud computing is an enhancement of distributed computing, parallel computing, grid computing and distributed databases. Cloud computing has a large potential for libraries. Libraries may put more and more content 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 Online Computer Library Center. More frequent online catalogues are linked to a consortium that shares resources. Data storage cloud is the main function of libraries, particularly those with digital collections, storing large digital files can stress local server infrastructures. The files need to be backed up, maintained, and reproduced for patrons. This can damage the data integrity as well as control bandwidth. Moving data to the cloud may be a leap of faith for some library professionals. A new technology and on the surface, it is believed that the library would have some control over this data or collections. However, with faster retrieval times for requests and local server space, it could improve storage solutions for libraries. Cloud computing or IT infrastructure that exists remotely often gives users increased capacity and less need for updates and maintenance and has gained wider acceptance among librarians⁵.

III. CHOOSING AN INFRASTRUCTURE

A. Private Cloud:

A model which is built for the limited use of one user, providing the maximum control over data, security, and quality of service. The user generally owns the infrastructure and has control over how applications are hosted on it. Private clouds may be deployed at the user's data center, or at a common facility¹.

B. Public Cloud:

A model in which a service provider provides resources such as applications and storage to everyone over the Internet. Public cloud services are usually offered on a pay per usage model. They are generally run by third parties, and various applications are likely to be interlaced together on the cloud's servers. The infrastructure is made available to the general public or a large industry group and owned by an organization selling cloud services¹.

C. Community Cloud:

A model that typically refers to a particular purpose cloud computing environment, shared and managed by a number of related entities participating in a common agenda. It can be managed internally or by a third-party and hosted internally or externally¹.

D. Hybrid Cloud:

A model which can be treated as a private cloud or as a public cloud. A hybrid cloud is a special environment in which the user provides and manages some resources in-house, and outsources the rest¹.

IV. CLOUD SERVER

Cloud servers mean virtual servers which run on cloud computing environment. That is why very often Cloud Servers are referred to as Virtual Dedicated Servers (VDS). While it is true that every cloud server can be called a virtual dedicated server, the opposite is not always true. This is because a virtual dedicated server can be placed only on a single hardware server and thus suffers from a single point of failure when any of its hardware fails. Cloud servers run as software -independent units. This means that a cloud server has all the software it requires to run and does not depend on any centrally installed software. Every Cloud computation's server may be the computation server, saves the server or wider band resources and so on¹.

Cloud computing providers for educational institutions are mainly Microsoft Live @edu, Google Apps and Amazon web services¹.

V. MODEL OF CLOUD COMPUTING

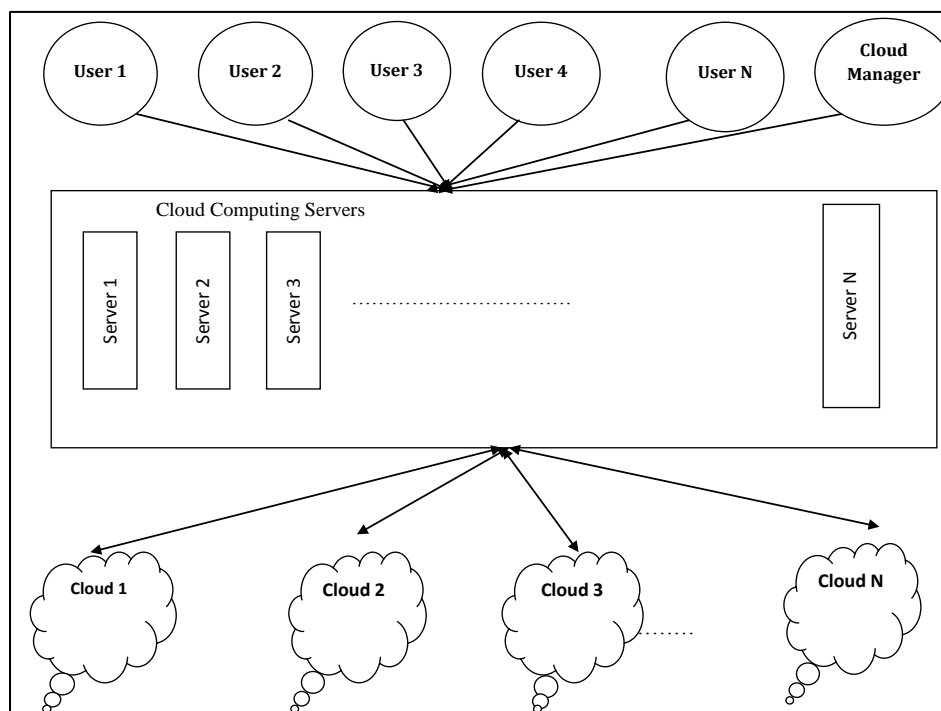


Fig. 1: Server Share Plan

VI. NEW HORIZON EDUCATIONAL INSTITUTION

New Horizon Educational Institution, one of the premier educational institutions of Bangalore, was established in 1970. NHEI has an imposing history of innovative education, with a vision and mission to impart holistic education to all its students. Strategically situated in the prestigious IT capital of India, Bangalore, New Horizon Educational Institution has grown by leaps and bounds. New Horizon Educational Institution, which constantly strives in Pursuit of Excellence, imparts the kind of education that makes our country proud. The name “New Horizon” is synonymous with creditable performance, committed training, honing of skills, manifestations of talents, nurturing of character and development of a holistic personality. Guided by a noble mission and a clear vision, inspired by the Motto “In Pursuit of Excellence”, and motivated by invaluable core values that ultimately create a complete human being, every institution here follows the New Horizon key philosophy that encompasses two important things to succeed in Life: the Mission Possible theory and the conviction that every problem has a solution.

A. About NHEI Libraries:

NHEI Libraries have a resource center for teaching, learning & research. Being the heart of the academic center, it is home for all the information services. It plays a proactive role in enabling access to information resources of all kinds and providing innovative, responsive and effective services to meet the changing needs of the academic community. The major objective of academic libraries is to provide right information/knowledge to the right users at the right time. These Libraries hold a hybrid collection of printed as well as electronic resources which include books, journals, databases, audiovisuals, CDs/DVDs, e-books, e-journals, reports, course materials; previous years question papers, Bound Volumes, Project Reports, case studies, conference proceedings, training manuals, etc.

B. Campus Details:

- 1) New Horizon College of Engineering – Marathahalli.
- 2) New Horizon College – Marathahalli.
- 3) New Horizon College – Kasthuri Nagar.
- 4) New Horizon Pre-University College – Kasthuri Nagar.
- 5) New Horizon College of Education – Indranagar.
- 6) New Horizon Public School - ICSE – Indranagar.
- 7) New Horizon Gurukul - Panathur.

C. Cloud Computing at NHEI:

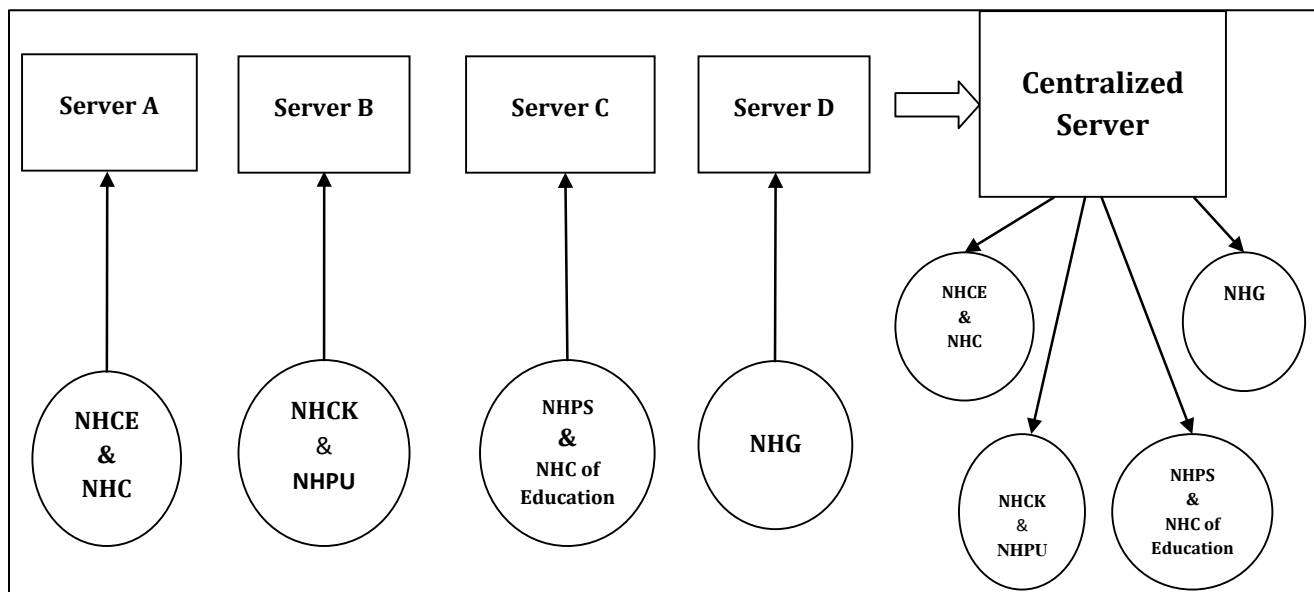


Fig. 2: Cloud Computing Implementation in NHEI Libraries

VII. ADVANTAGES OF CLOUD COMPUTING

- Cloud servers hold the best stability and cost effective.
- They do not suffer from the usual server hardware problems and is stable, fast and secure.
- Cloud servers are economically more efficient than the standard dedicated servers.
- In web hosting terms, the site will run faster on a cloud hosting server compare to a traditional server.

- Cloud server's extent very well. It is very easy and fast to add upgrades (CPU, Memory, disk space) to a cloud server.
- Backup and recovery; since all 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. Furthermore, most cloud service providers are usually competent enough to handle recovery of information. Hence, this makes the entire process of backup and recovery much simpler than other traditional methods of data storage.

VIII. LIMITATIONS OF CLOUD COMPUTING

- Cloud computing needs network connections to work. When the network is down, cloud services are down as well.
- Software incompatibilities; A large number of devices are still designed to connect specifically to a PC, so that some functions like printing, may only be performed if PC with the right software on it.
- It is expensive in case small scale cloud computing setup. However, in the long run, cloud computing is affordable and in time.
- Security concern: The other major issue while in the cloud is that of security issues. Before adopting this technology, the institution should know that surrendering all sensitive information to a third-party cloud service provider. Hence, need to make absolutely sure that choose the most reliable service provider, who will keep information totally secure.

IX. CONCLUSION

We all know that the library is not only a knowledge center; its main purpose is to offer acceptable services for all the users. The library should advance itself continuously by adopting many new IT technologies. Researchers tried to make progress current user service model in the academic library by using Cloud Computing. With the overview of Cloud Computing to academic library services will have a new leap in the near future. Most of the renowned Institutes have already adapted to the cloud virtualization due to its far more advantage over traditional local servers. The libraries will create more knowledge benefits for our country with the help of Cloud Computing. Cloud environment is a highly developed network environment; it appears to the users of high-quality service and high security.

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