

Cloud - Based Services in Library and Information Systems

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Abstract

In today world information technology is emerging as the key feature for the library science and cloud computing is a technique which is vastly used in IT industry. In cloud computing data is stored in cloud rather than stored in hard disk at local servers or computers. Clouds computing is a new computing model .The emerging and development of cloud computing have a great effect on the development and application of library. Cloud computing is an effective way to promote library development. This paper proposes a new library platform based on cloud computing.

Keywords: Cloud computing, digital library, service interface, future improvement,

INTRODUCTION:

With the development of Computer network and information technologies, Library face to great challenge, Such as resource storing and sharing, varies services requirement .Cloud computing concepts is proposed by Google Firstly.

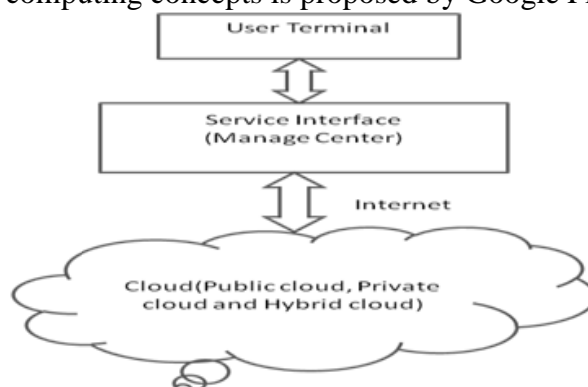


Figure- 1

Cloud Computing helps libraries shift away from owning and operating local services to web-based services. This paper equips you with the information and practice advanced needed to take evaluate, the many opportunities to take advanced of Cloud Computing. It features applications that empower you to use technology without the constrains of a locally supported infrastructure and more in depth information.

Cloud Computing is used broadly to describe nearly any types of virtualized computing environment where a library relies a major automation component. Cloud Computing will see continued growth, with a high proportion of new library automation projects deployed through software as a service rather than on servers housed in the library. In addition to libraries that implement the new-generation products intrinsically designed for implementation as cloud-based services, many libraries running traditional products will contract for hosting services from the vender. The library automation economy will continue to evolve away being from one driven by up – front license fee and will become one based more on annual subscription.

Cloud Computing is a mega change that has robbed IT of its traditional obligations and empowered the end of users with on demand utility computing. “Cloud based services set to transform the way libraries work, unleashing librarians from admin burden to focus on services for students and researchers ¹(JISC, 2011)”. According to (Stroh et al., 2009) “ Cloud Computing is nothing more than the collection of computing software and services that can be accessed via the Internet rather than residing on a desktop or internet server”.

The concept of cloud computing has sprung from the “*intergalactic computer network*” developed by J.C.R Licklider in 1960s where he wanted that everyone could use computer and anyone could get data irrespective of location and time in world. In 1961 John McCarthy, a computer scientist predicted that someday the computational power will be offered as a public service, such as water and electricity. This concept however, declined in early 1970`s due to the lack of physical infrastructure that could satisfy the needs of implementation of cloud technology. The relative novelty and exploding growth of cloud computing makes it an exciting area for research. The present paper aims to assess the state of cloud computing research.

DEFINITION OF CLOUD COMPUTING:

“ Cloud Computing is a style of Computing in which massively scalable IT-related capabilities are provided as a service to external customers using Internet technology”
(Gartner, 2009)

“ Cloud Computing is the delivery of computing as a service rather than a product, whereby shared recourses, software, and information are provided to computers and other devices as a metered service over a network(typically the internet)”
(Wikipedia, 2012)

Cloud Computing means using web services for our computing needs which could using software applications, storing data, accessing computing power, or using a platform to build applications”

(Kroski, 2009)

WHAT IS CLOUD COMPUTING?

Cloud Computing is a comprehensive solutions that delivers IT as a service. It is an Internet –based computing solutions where shared resources are provided like electricity distributed on the electric grid. Computers in the cold are configured to work together and the various applications use the collective computing power as if they are running on a single system. The flexibility of cloud computing is a function of the allocation of resources on demand. This facilities the use of the systems cumulative resources. Resources are used as an aggregated virtual computer.

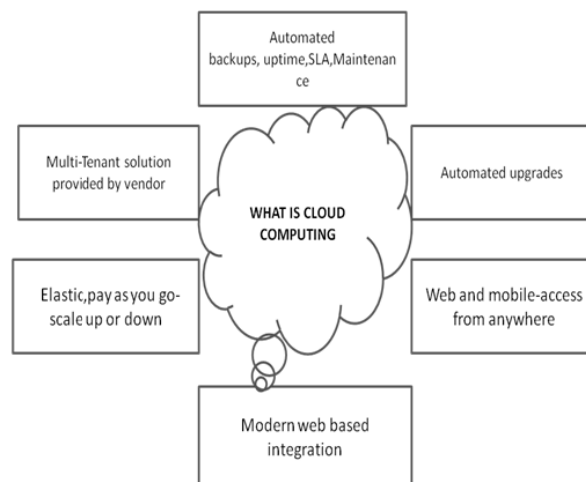


Figure-2

HISTORY OF CLOUD COMPUTING:

- History of cloud computing join us on Twitter and Face book
- Flash back evolved over a period of time roots traced back to application service providers in the 1990’s parallels to Saas Evolved from utility computing.
- A short History of cloud computing Amazon EC2 (August 2006) Google App Engine (April 2008) Microsoft Azure (October 2008) Face book platform (May 2007) Amazon S3 (March 2006) Sales force App Exchange (March 2006) Definition Building on Compute and Storage virtualization technology, and leveraging the modern web, cloud computing provides scalable and affordable compute utilities as on – demand service with variable pricing schemes, enabling a new consumer mass market.

A Short History of Cloud Computing

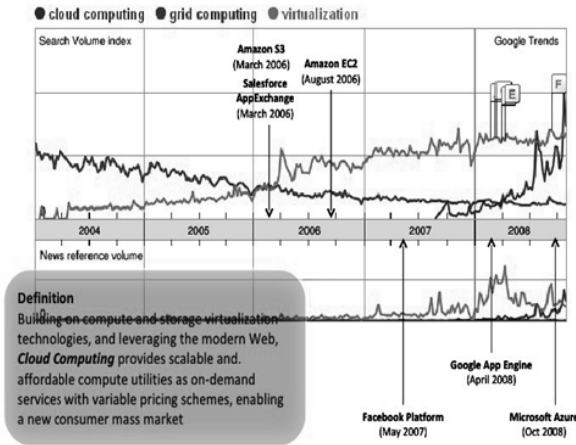


Figure-3

CHARACTERISTICS OF CLOUD COMPUTING:

- **On-demand self-service:** A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider.
- **Broad network access:** Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, tablets, laptops and workstations).
- **Resource pooling:** The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand. There is a sense of location independence in that the customer generally has no control or knowledge over the exact location of the provided resources but may be able to specify location at a higher level of abstraction (e.g., country, state or datacenter). Examples of resources include storage, processing, memory and network bandwidth.
- **Rapid elasticity:** Capabilities can be elastically provisioned and released, in some cases automatically, to scale rapidly outward and inward commensurate with demand. To the consumer, the capabilities available for provisioning often appear to be unlimited and can be appropriated in any quantity at any time.
- **Measured service:** Cloud systems automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth and active user accounts). Resource usage can be monitored, controlled and reported, providing transparency for the provider and consumer.

- Versatility
- Cost-effectiveness (pay-per-use)
- Virtualization
- Security
- Sustainability
- Scalability
- User-friendly
- Resource Optimization
- Infrastructure and service-level agreements (SLAs)

DIGITAL LIBRARY MODEL BASED ON CLOUD COMPUTING:

Today, there is a serial of problem in digital library. Such as resources independ of each other, Low level of information technology, on- uniform resource from hardware limitation. In order to solve these problem, this paper proposes a new library platform based on cloud computing, which can offer unified service interface and provide personal service to different terminal users, such as computer, PC, and so on. The Model of digital library platform is as figure 2.

Digital library platform consists of four layers: infrastructure layer, data service layer, and the platform provided service to users through two ways: user interface and service interface. User can visit. Digital library and meet need through the above two ways. Users only need to consider what service, regardless of the service implementation course.

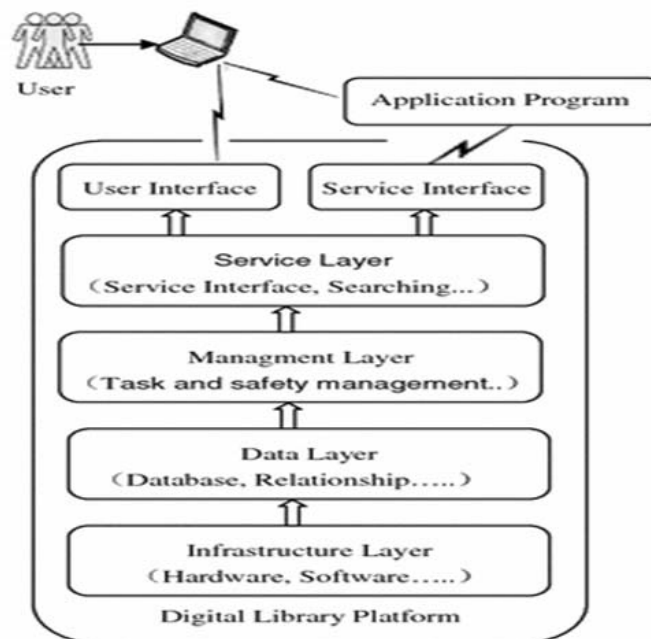


Figure-4

USE OF CLOUD COMPUTING IN LIBRARY:

- Rapid Service
- Secure Service
- Satisfying User Experience
- Lower Costs
- Multi-User Access
- Development Platform
- Infinite Storage.

CLOUD COMPUTING IMPORTANCE FOR LIBRARIES:

Being a new and emerging area, cloud computing has generated much interest in library application. Predictions are that within five years, all library collection, system and services will be driven in to the cloud. Cloud library management systems, Cloud OPAC, Cloud Electronic Resources Management System, etc. will replace individual and standalone library system such as LMS, OPAC and ERMS. In addition, Cloud Computing will enable libraries to collaborate on the web.

ADVANTAGE OF CLOUD COMPUTING IN LIBRARY:

Cloud computing offers following advantage:-

- There is no need own all infrastructure facilities.
- Provides large amounts of processing power.
- It can be used a personal workspace.
- Provides unlimited virtual server.
- Expenditures are minimized.
- Creates personalized repository of information.
- It is more economically

IMPROVEMENTS OF CLOUD COMPUTING IN LIBRARY:

Uses of cloud computing in strengthening library services with the ultimate objective of repositioning academic libraries in to next generation libraries. Cloud computing solutions at their essence are built on current technology and should be architected to allow for technology shifts. Looking at the explosion of mobile devices one sees how businesses and organizations operating in a cloud environment are able to adapt and deliver their services to the new devices much more quickly and less expensively. The mainstay of libraries is the library management system (LMS, also known as the integrated library system or ILS). Library management systems were developed before the Internet and Web existed and are generally closed proprietary systems. It has been difficult and costly for these closed systems to take advantage of new technologies as they emerge. It is also challenging to integrate to external systems and libraries must rely on their vendors to do any such integration. Over time libraries have needed to add more systems to manage their changing collections which moved

from strictly physical collection management to a combination of physical, licensed and digital collections. Since each of these systems has stood alone integrating them has been difficult and at times not possible. What can change in a cloud environment for managing core library services? First would be the possibility of open service oriented architecture. Many cloud solutions offer this type of openness with published application program interfaces (APIs) that any programmer can take advantage of. This means if a new service or technology emerges libraries will not always be dependent on a vendor or other third party to start taking advantage of these services and technologies. Existing library systems have used APIs to connect to external services but they have remained closed proprietary systems making it hard to integrate them into external services. As Andrew Pace stated it, "...demands fall short by merely asking that local systems avail themselves of other Web services rather than establishing themselves as services in their own right." When library systems are deployed as open cloud solutions then the library community itself can step up to create extensions to their core services and more importantly share them throughout the community using cloud solutions. This makes it possible to integrate two services once André-use it across the community.

Secondly libraries can get out of the business of technology and focus on collection building, patron services and innovation. Servers can be decommissioned and no longer require replacement every five years (or less). Staff no longer has to maintain the complex software stack necessary to run local systems and worry about compatibility of the stack during upgrades. Instead technical skills can be re-deployed for extending cloud services into their environment and their environment into other cloud services.

CONCLUSION:

Cloud computing can provide organizations with the means and methods needed to ensure financial Stability and high quality services. It can bring several benefits for libraries and give them a different future. The cooperative effect of libraries using the same, shared hardware, services and data rather than hosting hardware and software on behalf of individual libraries can result in lowering the total costs of managing library collections and enhancing the both library user's experience and library staff workflows. Of course, there must be global cooperation's if the cloud computing process is to attain optimal security and general operational standards. With the advent of cloud computing it is imperative for us all to be ready for the revolution.

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