

Information Service Vis-a-Vis Online and Cloud Environment in 21st Century: Promoting Environmental & Bio Informatics

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ABSTRACT

Information Science is a discipline which is responsible for solid and sophisticated information infrastructure built with the help of techniques and technologies. Information Science is treated as main stakeholder of Information Service. Information Science and its principles help in information services and its preliminary activities which include collection, selection, organization, processing, management and dissemination of information. Earlier Information Services were only provided by the information foundations, hand to hand or directly. But such situation and days are no more exist. Today information may be collected in several ways including virtually. This paper talks about Information Service and its emerging and changing scenario. Paper also mentions the role and value of cloud computing, for the better information and similar services, particularly for online and electronic information and documentation services.

KEY WORDS: Information Service, Information Sciences, Online Services, Virtualized Services, Cloud Computing, Knowledge Management, Information, Knowledge.

1. INTRODUCTION

Information Technology and Computing have changed the entire dimension of information services from recent years and common platform is listed in Fig.1 in this regard. Today online Information Service plays an important role in the overall development of the organization and institutions. Earlier only information foundations were doing Information Services but, now-a- days other departments and organizations feel about different sections on information. Ultimately, separate information division / information centers are established (Buyya, 2009; Pau1, 2014).

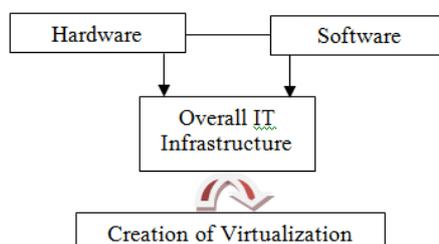


Figure.1. Depicted Cloud Computing and its role as Virtualization

Searching online databases has been available even since the early 1970's. Early database providers changes their way of offering services. CompuServe is considered the first major commercial online services. This was the text based Information Service evolved in the 1980's, though some other service providers are Delphi Online Service and GENic. However, the traditional textual information services changed rapidly when GUI based interface and computing systems are emerged. In 1994, when internet gained most popularity in the Government as well as in common people, Information Service was a new tool on it (Calheiros, 2011; Clemons, 1986; Paul, 2014).

Objective: The main aim and objective of this study is includes, but not limited to:-

- To know about Information Service, its types and the characteristics. Most importantly to look into the historical background of Information Service and its changing trends.
- To assess the online infrastructure and online service requirement in today's context, particularly in cloud and virtualization environment.
- To find out main aim and objective of cloud computing in Information Services, including its challenges and opportunities in respect of information activities such as Information Analysis, Consolidation and Repackaging.

2. METHODS & MATERIALS

Methodology: For this research work, review of literature treated as primary source and thus several documentary and non-documentary sources have been utilized. For cloud computing some popular journal are also referred. Moreover, for practical implication of cloud computing in Information Center, some web reviews are conducted, particularly for Information Foundations and so on.

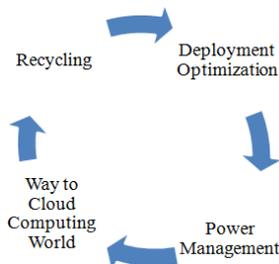


Figure.2. Depicted steps of Virtualization powered by Cloud Computing

Computational Changes and Online Information Infrastructure: After popularity of internet, several online services were offered by the IT and computing service providers. During that period CompuServe, AOL and some other service providers offered internet, e mail, Usenet, ftp access and complete www facilities. However, Computing services initially deal with Dumb Terminal, Slow Transmission rate, bibliographic databases, intermediary searching, and commercial online systems. Then some other services like medium transmission services directly and ASCII full text databases are started (Davenport, 1997; Harmon, 1999; Paul, 2014).

Computing based Information Services were also possible to avail offline manner, where data and information are possible to retrieve within the centre or campus through dedicated connections or it may also be available through CDROM as well as similar type of medium. Though some experts claim that, online services are possible to retrieve with client server environment, internet and intranet environment, the evolution and step of Cloud Computing is depicted in Fig.2 and Fig.3. However for each and every type of computing or online services following are the key essentials (Dikaiakos, 2009; Gurbaxani, 1991; Paul, 2014).

- Service Provider - This provides services to the client. Database producer are also needed to bring the services
- Networking Systems
- Healthy Telecommunication Systems
- Workstation and terminals
- Hardware and Networking devices
- Databases and so on.

In online Search, matching of user profile with document profile, play an important role. For searching, first of all, user inputs the search request. According to user demand, systems/ workstation match the user profile or link to the stored information. Then systems retrieve items and ultimately display the result (Hooper, 2008; Paul, 2014).

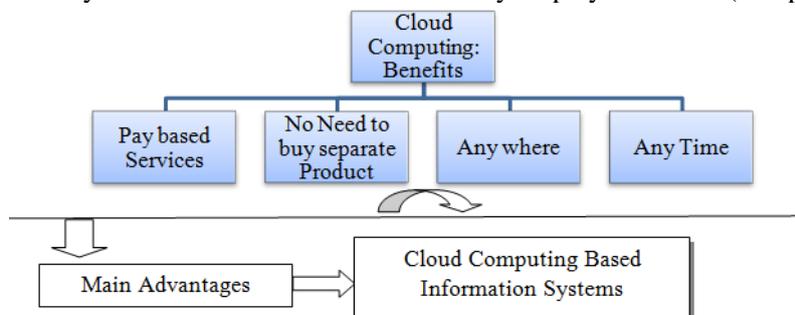


Figure.3. Depicted Cloud Computing and some reason of its popularity at a glance

Thus during installation of services, it is very much essential that right and healthy search type, search terms, format, search costs and search experience play an important role. There are several databases we may find out. Some are dealing with language, some other aspects such as commerce, trade, science and technology, humanities, social work, social studies and so on. Today, in information industry several service providers are working such as EBSCO, Ulrich Directory, Scopus, ProQuest, Citeseer, J Gate etc. Some Indian players such as Indianjournals.com, Academicjournals.com and so on are also into the service. However, services are also available in platform independent type such as CD-ROM (Karthikeyan, 2012; Paul, 2014; Melville, 2004).

Virtually, for healthy and sophisticated Information Services, a prominent internet service provider is essential who can provide transparent internet services. Today popular service providers are BSNL, VSNL, Reliance, ERNET, Satyam Online, Sify and so on.

Though recently Linking tools are playing important role for searching or finding out information among others, DOI or Digital Object Identifier play an important role to find out Digital Object in file or document. This recently gained popularity in Journal, books, article identification from the internet. It mainly has two components – prefix and suffix. In DOI, prefix start with 10 and a number designating organization who has obtained that concerned

prefix (Kettinger, 1995; Paul, 2014; Subashini, 2011). Today there are several reasons for which online search or Information Service gained popularity such as

- It is easy to avail from anywhere through the net and the services are possible with various platforms.
- It is cost effective than traditional man to man or manual Information Service.
- It is much more interactive and up to date than manual services.
- Available through the net rather than only from library or similar establishment.
- After collecting the required data, it is possible to modify or change the data.
- Future use is possible with portability.
- In online or computing based information so many search strategies are possible to use.
- Possible to make number of copies, possible for instant as well as constant upload as far as data and documents are concerned.
- Possible to find out information more quickly.

Though, non-conventional services are also possible to avail with the help of online Information Service such as

- Electronic Discussion Group
- Research Centre Information
- Universities Information Centre
- Products Information Centre
- Collection Development Information Centre
- Bibliographic Services

Recently, so many online services are available with internet as shown in Fig. 4, such as

- Online Sample/ Free Article
- Free Abstract/ Catalogue
- E-notification/ E-Encyclopedia
- Current Awareness Service
- Selective Dissemination of Information
- Directories
- Dictionaries
- Free News Paper/ New links
- Thesauruses
- Map/ Atlas and so on

Periphery and Scope of Digital Information Service and Cloud Computing: Cloud Computing is an important name in modern Information Technology practice, which is mainly responsible for the visualization of IT infrastructure, which includes hardware, software application packages. Cloud Computing is actually based on Hi-Power and sophisticated internet services. Here service provider is very much important.

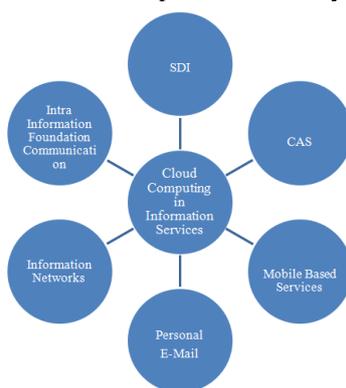


Figure.4. Showing some popular Information Services powered by Cloud Computing and Online Systems

Application of Cloud Computing is possible in so many services such as

- Information Network and its own IT Infrastructure establishment
- Communication between Information Centre and Information Centre
- Connection among Information Centre and Information establishment such as Information Centre, Documentation Centre, Data Centre, Referral Centre, Libraries and so on.

Conventionally, Information foundations are needed to establish their own IT infrastructure for official work and to keep information service transparently, where the services are Digital Archive, Digital Repositories, CAS and so

on. Thus Information foundations are needed to employ several computers, workstations, networking devices, and systems, and so on. Hence, it needs higher interfaces and money and other allied arrangement, including application and software service. And most importantly also include computing equipments such hardware, software services and application from the remote places anytime and anywhere.

3. RESULTS AND DISCUSSION

Advantages: Cloud Computing in Information Service provides several opportunities. They are,

- It does not employ Physical Information Infrastructure of its own. Thus Information Centre and similar foundation may be engaged for leased services to any secure and healthy service providers.
- It is economical, compared to in-house IT system building.
- It Helps to select only need based services, depending upon Information Requirement.
- It is important in Information Networks and Digital Repository building (Paul, 2014; Wang, 2008).

Disadvantages: Though Cloud Computing based Information Infrastructure provide several opportunities, it may also put some negative impacts. They are

- Cloud Computing based Information Systems need open source software development as still development and availability of such software's are limited.
- Availability of skilled manpower in this field is still limited. Availability of Interdisciplinary knowledge [*information and cloud*] is also an important factor.
- Initially, Cloud based Information Services require healthy funding and budget.
- Still service providers in this field are limited than common service providers (Paul, 2014; Watson, 2010).

4. CONCLUSION

Information Foundations, Institutes and their initiatives are very much important for complete information solution of health, political, economical and social and other domains. World is moving towards digitalization. The benefits of digitalization may help in many ways to build a healthy society and economy. As information is treated as wealth, it helps in economic and social development in many ways. Cloud Computing based Information Systems and smaller Information Infrastructure (like Information Centre, Data Centre, Libraries, Information Networks, Documentation Centre) may ultimately build a healthy Information Infrastructure from the root level.

REFERENCES

- Buyya R, Ranjan R & Calheiros R.N. Modeling and simulation of scalable Cloud computing environments and the CloudSim toolkit, Challenges and opportunities. In High Performance Computing & Simulation, 2009. HPCS'09. International Conference on, 2009, 1-11
- Calheiros R.N, Ranjan R, Beloglazov A, De Rose C.A & Buyya R. CloudSim, a toolkit for modeling and simulation of cloud computing environments and evaluation of resource provisioning algorithms. *Software, Practice and Experience*, 41(1), 2011, 23-50.
- Clemons E.K. Information systems for sustainable competitive advantage. *Information & Management*, 11(3), 1986, 131-136.
- Davenport T.H & Prusak L, *Information ecology, Mastering the information and knowledge environment*, Oxford University Press, 1997.
- Dikaiakos M.D, Katsaros D, Mehra P, Pallis G & Vakali A. Cloud computing, Distributed internet computing for IT and scientific research. *Internet Computing, IEEE*, 13(5), 2009, 10-13.
- Gurbaxani V & Whang S, The impact of information systems on organizations and markets. *Communications of the ACM*, 34(1), 1991, 59-73.
- Harmon RR & Auseklis N, Sustainable IT services, Assessing the impact of green computing practices. In *Management of Engineering & Technology*, 2009. PICMET 2009. Portland International Conference on, 2009, 1707-1717.
- Hooper A. Green computing. *Communication of the ACM*, 51(10), 2008, 11-13.
- Karthikeyan N & Sukanesh R, Cloud based emergency health care information service in India. *Journal of medical systems*, 36(6), 2012, 4031-4036.
- Kettinger WJ, Lee CC & Lee S, Global Measures of Information Service Quality, A Cross-National Study, *Decision Sciences*, 26(5), 1995, 569-588.
- Kumar K & Lu Y.H. Cloud computing for mobile users, Can offloading computation save energy?. *Computer*, (4), 2010, 51-56.

Melville N, Kraemer K & Gurbaxani V, Review, Information technology and organizational performance, An integrative model of IT business value. *MIS quarterly*, 28(2), 2004, 283-322.

Pau1, Prantosh Kumar, Dangwal KL, Cloud Computing Based Educational Systems and iits challenges and opportunities and issues, in *Turkish Online Journal of Distance Education-TOJDE*, 15 (1), 2014, 89-98.

Paul, Prantosh Kumar, Chatterjee D, Rajesh R, Shivraj KS, Cloud Computing, Overview, Requirement And Problem In The Perspective Of Undeveloped And Developing Countries With Special Reference To Its Probable Role In Knowledge Network of Academic Field., in *International Journal of Applied Engineering Research*, 9 (26), 2014, 8970-8974

Schmidt NH, Ere K, Kolbe LM & Zarnekow R, Towards a procedural model for sustainable information systems management. In *System Sciences, 2009. HICSS'09. 42nd Hawaii International Conference on*, 2009, 1-10.

Subashini S & Kavitha V, A survey on security issues in service delivery models of cloud computing. *Journal of network and computer applications*, 34(1), 2011, 1-11.

Wang D, Meeting green computing challenges. In *Electronics Packaging Technology Conference, 2008. EPTC 2008. 10th*, 2008, 121-126.

Watson RT, Boudreau MC & Chen AJ, Information systems and environmentally sustainable development, energy informatics and new directions for the IS community, *MIS quarterly*, 2010, 23-38.