Intelligent Cloud Computing

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***Abstract*— Abstract**

This paper describes a very specific form of cloud computing and its application in ecommerce industry, in reference to research on BhopalKart.com. The various usages of cloud are discussed and the significant benefits of cloud in terms of economy and infrastructure requirements are debated in this paper. Also, the issues with the cloud are clearly elaborated like traffic congestion, etcetera. Concepts like load balancing, performance prediction, IAAS, PAAS and SAAS, and various other intelligent usages of cloud computing are discussed with their clear-cut application potential in regards to ecommerce industry. At the same place, the comparisons are drawn between various cloud computing services available in market while presenting conclusion on the basis of maximum optimization of cloud based resources to achieve maximum output services for an ecommerce company.

***Keywords*— IAAS, PAAS, SAAS, Cost analysis**

I. INTRODUCTION

There was a time, when technology flow was from International Government to Indian Government then to large and small enterprises and finally to individuals. But cloud computing is such a wave of technology which is the opposite and it doesn't take as much, to get started with a new idea. So, more and more organizations can take advantage of this wave which has brought down several barriers. Now, many people are thinking, about how could they use Cloud to get out their delivery faster, about integrating cloud with social media provided that there are data speed and data usage usage-limits, especially in case of India.

It's now possible to save money with the help of Cloud Computing, as before this, 60 to 80 percentage of the cost was engaged in maintaining the installed IT infrastructure. Cloud offers services can potentially reach directly to people in less cost, thereby increasing the efficiency of delivery model. Although, from the user's point of view, nobody understands how cloud does that work and he/she has a simple and elegant usage of this vast IT infrastructure without getting into the complexities involved in providing those services. This technology allows ideas to flourish and things to be created that are revolutionary. This smart technology can also be termed as a greener technology due to its vast potential of reducing carbon emission.

A technology in its most ideal aspects is called intelligent if it possess the ability of self-actualization, although, cloud computing being more of a concept then a technology, Cloud-Computing can be called intelligent, if it able to compensate or replace the existing technology by providing better and intelligent alternative in terms of cost and serviceability.

On the similar lines, Bhopalkart.com has started working in Bhopal, with their revolutionary target to bring all shops of Bhopal online, i.e. giving online platform to local shops, hotels, services, etcetera to sell their products online, while leaving the responsibility of delivery of products, maintenance of database, etcetera on Bhopalkart.com. This is made possible with the help of cost effective cloud technology services available in the market.

II. LITERATURE REVIEW

1. Guangjun Cai suggested patterns in his paper paper for managing resources in cloud computing. The first is used to aggregate the service with the same functionalities; the second is used to separate the changes from the composing result; the third is used to separate the interactions from the function parts and the final pay attention to two different roles. For each of them, we present its name, condition, structure, generation, consequence and example. These patterns can be used in higher automation degree.

2. Yuvraj Singh Gurjar, Vijay Singh Rathore in their paper on 'Cloud Business Intelligence', said that Cloud BI is a revolutionary concept of delivering business intelligence capabilities ―as service‖ using cloud based architecture that comes at a lower cost yet faster deployment & flexibility and hence concluded - Cloud is a big part of future Business Intelligence and offers several advantages in terms of cost benefits, flexibility of implementation, availability and speed of implementation. BI (Business Intelligence) on the Cloud offers huge possibilities for removing barriers to decision making by integrating high volume and mission critical business processes. Irrespective of the age of a BI landscape the cloud model can drive increased BI adoption, improved end-user experience, better access to analytics and reduced IT dependence.

3. Octavian Dospinescu in 'Web Services in Mobile Applications', discussed about the future of SOAP and REST architectures will depend on the support offered by the industry in the implementation of new series of features according to the technological evolution

4. 'The new paradigm Cloud Computing is the next logical step in distributed systems, which supports the sharing and coordinated use of resources, independent of its location and type. Cloud computing allows you to unite pools of servers, storage systems and networks into a single enormous virtual resource pool so that you can use it for single resource-intensive task. This technology has the potential to address the unmet needs of Indian villagers from education to market access. In India, Self Help Groups (SHGs) represents a unique group of poor women who have volunteered to organize themselves into a group for eradication of poverty of its members.' This potential of Cloud computing is discussed in depth by J. Hannah Monisha and Dr. V. Rhymend Uthariaraj.

5. Based on results of the research on 'The Impact of Cloud Computing on Information Systems Agility', Mohamed S. Sawas and Mohamed K. Watfa concluded that some cloud computing service models improve specific agility dimensions, for example, IaaS improves technical infrastructure agility and PaaS improves Human Characteristics while SaaS does not associate with any category. This comes with a suggestion that, cloud computing still needs a lot of improvement in order to convince businesses on the agility aspects it can provide.

6. **Virtually Private Network**: A virtual private server (VPS), also called a virtual dedicated server (VDS), is a virtual server that appears to the user as a dedicated server but is actually installed on a computer serving multiple Web sites. A single computer can have several VPSs, each one with its own operating system (OS) that runs the hosting software for a particular user.

7. **Dedicated Servers**: The client leases an entire network without sharing with anybody else, giving client the flexibility to choose operating system, software, etcetera according to their personal requirements. Although, this is the costliest type among all the three, this offers benefits in terms of security of data. Such servers are used by websites which face traffic in large amounts

III. METHODOLOGY

Close cost comparisons are made of using and not using cloud computing as a service and platform. Cloud infrastructure cost benefit are also evaluated by conducting the study on an ecommerce website for reference, i.e. bhopalkart.com.

Applications of cloud computing in Bhopalkart.com are explained clearly, with clear indication of cost benefit of all application aspects. Graphs showing the relative cost frames are plotted.

Finally, conclusions, on the basis of the results obtained are presented; describing the how can an enterprise use cloud computing to enjoy cost advantages.

A. Demographics of Bhopal:

Metropolitan Bhopal, the capital of Madhya Pradesh, India has population of 1,886,100 with average literacy rate of 83.52 %, as per census of 2011 and the second largest city in the state. Its economy is mainly based on Industries. Electrical goods, cotton, chemicals and flour milling are the main source of economy. Zardaori and embroidery of Bhopal's old city is also famous. Now being a metropolitan city, many Software/IT sectors companies are setting up offices in the city. Bhopal has per capita income of Rs. 49979 at constant (2004-05) Prices.

B.Bhopalkart.com Cloud

Kind of servers on which BhopalKart.com is operating on:

8. Bhopalkart.com operates on shared server offered by Bluehost.com. The plan of BhopalKart.com is a Linux hosting plan with unlimited Domains, unlimited Data Transfer limits, and unlimited email accounts on high performance servers. The rent of this Bhopalkart.com's server is Rs. 3551 for the first year, which was purchased @ 42% discount. This package also includes a free domain i.e. bhopalkart.com, whose average market cost is Rs. 500 per year. Unlimited subdomains are also part of this package. File transfer manager allows to transfer the files directly from computer to server.

   PHP - My Admin and C-Panel for handling php and complete sql database management, etc are offered by the Bluehost.com. This is an example of platform as a service, which is used by programmer to manage and program his/her database and website functionality. Security of the code is another important feature which is can be ensured by purchasing SSL certificate.

C. : Bhopalkart.com influence region

Areas of Bhopal where BhopalKart.com is operating: BhopalKart.com is also operating in Metropolitan Bhopal as well as Kolar region.

Software as a Service

Cloud Based Services Hired: BlueHost.com
BlueHost.com

Software, which are offered as a service for free on internet are used for various different aspects of BhopalKart.com

- *www.bulkresizephotos.com*– the website offers Software as a service. Multiple photographs can be easily resized using this website and almost instantly. The photographs of size 500x500 pixels are uploaded in the website, although the photographs are clicked using DSLR camera, which gives output as high resolution images. The PHP in the website runs and bulk resizes the images to the desired size. This is a good example of software as a service by bulkresizephotos.com.

- *Smallpdf.com* - in which a PDF can be unlocked or locked, compressed, converted to PPT, JPEG, WORD, and vice versa. Such vast range of services is made possible possible with the help of appropriate PHP codes which helps the website to provide such services. These services are free of cost and does not require any software to be installed on computers, thereby saving time, and the money required to purchase these software. Various important PDFs have been reduced in size for different BhopalKart.com purposes.

Also, we cannot ignore the obvious contribution of *mail.google.com* and the official E-mail of bhopalkart.com i.e. *info@bhopalkart.com* and *care@bhopalkart.com*, which are also example of software and infrastructure as a service, as it replaces outlook software and provides storage space for the emails.

IAAS (Infrastructure as a service):

BhopalKart.com utilizes the data infrastructure offered by Bluehost.com. This is one of the finest and most acceptable infrastructure services in India. They offer two different kinds of hosting servers – Indian Servers and American Servers. Hosting on Indian servers is relatively costlier, as their response time is relatively shorter than those of US servers. Hence, Bk is hosted on Indian Servers. All Bhopalkart.com's servers of Bluehost.com come with two hard disks by default with RAID1 enabled, which makes sure, even when one hard disk completely breaks down, the data is still intact and server will remain online.

Table 1

	Bluehost .com	**Godaddy .com**	**Bigrock .com**
Shared has 3 major categories			
Single Domain		149	
Three Domain	139		127
Unlimited Domains	305	299	319
Virtually Private Network has 4 major categories			
One to Two GB Ram	1151	1699	
Two to three GB Ram	1960	1999	1190
Three to Four GB Ram	3111	2499	2550
Four to Five GB Ram		3499	5100
Five to Six GB Ram	5000		
Six to Eight GB Ram		6999	

All figures shown are in INR and some are based on current conversion rates of USD to INR. All values are of monthly amount valid only on annual package. Also, note that, these are broad classifications based on the configurations and not on the plan names.

Providing such infrastructure, platform and software services at above costs, which are low in comparison to the actual costs of aforementioned works (using personal computers and software and purchasing infrastructure like servers, etc, provided the cost is not compensated with piracy), is a most unique aspect of cloud computing as it shares the cost burden on a large number of people and allows one to pay only for the limited part of their infrastructure, software and platform that he/she uses.

Cloud load balancing may be adopted when the server's capacity is determined and hence load can be distributed on different servers, this depends on the traffic coming on the website and the amount of data. This method is economic and an intelligent method adopted in order to minimize response time and hassles due to excessive demand.

PAAS (Platform as a Service)

Bluehost.com also provides supports PHP 5.2/5.3, Perl, Python and Ruby on Rails along with allowance for unlimited number of MySQL databases. To make sure that customers never run out of space on the server, Bluehost.com gives you the power to infinitely expand the storage using our Shared storage device. This is in addition to your default local RAID1 mirrored hard drives.

D. Pick and Drop Methodology

Weebly.com's pricing of 1633Indian Rupee per month for one year – offers fully integrated cart and no prior knowledge of programming language is required, to make this.

Without, worrying about the storage requirements, and all the above technical stuff, ecommerce website can be made within few days of dedicated ala-carte drag and drop of elements.

Similar plans costing Rs. 1935 per month are available in a more professional and widely accepted online shopping store solution.

Another good option for this approach is wordpress.com, which is famous for its content management system. Many hosting sites have special plans for 'Wordpress-Hosting'.

E. Alternatives ways of making ecommerce website

Awardspace.com offers a single domain hosting free plan, which can be used with limited number of sub-domains (currently 3), and limited number of parked domains. This free plan also gives access to 2 domain email ID accounts. C – panel (control panel) and complete database management services comes along with this free plan, which further has a limitation of 250 mb of storage space.

Domain name can be purchased free as a ".tk" domain on dot.tk.

Another way of publishing the website as an e-commerce website is: allowing the personal laptop or desktop to act as a server. Although, there are various limitations in terms of speed, bandwidth, hardware, etcetera that comes forth by using these methods.

IV. CONCLUSIONS

a. Shared servers of various host providers offer an economical and effective hosting of an ecommerce website, provided the load on the website and hits per unit time is within the effective range.

b. Lack of programming skills is not any more hindrance to make an ecommerce website; ecommerce website should be made on weebly.com or shopify.com depending on the budget allowance.

c. In order to make trial website, one can go extremely cost effective, by free hosting and free domain.

d. Cloud computing offerings like plateform, infrastructure, software and cloud load distributions have made the computing and ecommerce website hosting an economic tool.

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