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A Study Cyber Infrastructure Utilization and SOA Services in Cloud Computing

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Abstract

The Cloud computing emerges as a new computing paradigm which aims to provide reliable, customized and guaranteed dynamic computing environments for end-users. In this paper, we study the Cloud computing paradigm from various aspects, such as definitions, distinct features, and enabling technologies. The Cloud computing emerges as a new computing paradigm which aims to provide reliable, customized and guaranteed dynamic computing environments for end-users. In this paper, we study the Cloud computing paradigm from various aspects, such as definitions, distinct features, and enabling technologies. The virtualization concept plays a dominant role in doing all this; the environment is virtualized to hide the implementation of how they are multiplexed and shared. In this paper we explore the possibilities, how the emerging data centre "Cloud" model of computing is going to more profitable and eco friendly, in comparison to the traditional computing model. SOA and cloud computing share many common principles, but also differ significantly in their role in IT architecture. SOA is mainly an application architecture with horizontal services; while cloud computing is an IT architecture with vertical services.

Keywords: *Cloud computing, Cyber Infrastructure, SOA Services*

INTRODUCTION

Cloud computing is a new computing paradigm, involving data and/or computation outsourcing, with Infinite and elastic resource scalability , On demand "just-in-time" provisioning and No upfront cost … pay-as-you-go That is, use as much or as less you need, use only when you want, and pay only what you use. Cloud computing will be based on virtualized resources.

Web based computing resources that deliver on demand information services to users from any location in the world. It is essential to state that this form of computing is very different from utility and grid computing.

Cloud hosting, also referred to as clustered hosting, is an online hosting service that is delivered to users from a network of linked servers. These servers are usually located in data centers scattered all over the world. The cloud consists of two main components: the back-end and the front-end. Everything ends with the client. The hardware components, the application and everything else developed for cloud computing will be used in the client.

Without the client, nothing will be possible. Cloud computing promises to cut operational and capital costs and, more importantly, let IT departments focus on strategic projects instead of keeping the datacenter running.

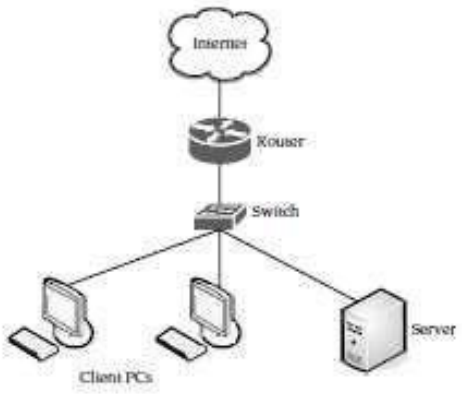

Figure: 1

A cloud is used in network diagrams to depict the internet. Many users or clients share public cloud facilities. The economics of sharing a virtualized cloud web hosting in public is to cut the service cost by distributing the facility's cost among its users. With this arrangement, users only get to pay for what they actually use. This model is also referred to as pay-per-use model.

In a public cloud set up, users also share the same security configurations. Therefore, if you intend to use this service in your business, you need to ensure that it complies with your business' security measures.

Cyber Infrastructure, "CIS"

We at CIS work hard every day and provide our clients, quality solutions in the areas of Custom Software Development, ITeS Services, Outsourcing Services, Offsite/ Onsite Staff Augmentation, for industries such as engineering, communications, software and systems development etc Today, almost any business or major activity uses, or relies in some form, on IT and IT services.

IT is the primary business of an organization, less than 20% of its efforts not directly connected to its primary business should have to do with IT overhead, even though 80% of its business might be conducted using electronic means. m hardware and platforms to application components, software services, and whole applications, as shown in Figure 1.The commercial cloud marketplace offers a wide range of cloud services that vary in complexity and value. The common thread in cloud computing offerings across all levels of the stack is the consumer/provider relationship and a dependence on the network to connect the two parties.

A cloud is used in network diagrams to depict the internet.

Cloud Clients Presentation Layer Example: browsers, mobile devices
Cloud Applications Software as a Service Example: Google docs or calendar
Cloud Services Components as a Service Example: SOA via Web Service standards
Cloud Platform Platform as a Service Example: web server, app server
Cloud Storage Storage as a Service Note: formerly utility computing

Cloud Infrastructure Distributed Multi-site Physical Infrastructure Note: enabled by server virtualization
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Figure: 2

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Service

Oriented Architecture (SOA): is a flexible set of design principles used during the phases of systems development and integration. A deployed SOA-based architecture will provide a loosely-integrated suite of services that can be used within multiple business domains.

Cloud Computing: is Internet-based computing, whereby shared resources, software and information are provided to computers and other devices on-demand, like a public utility.

SOA is for application architecture. The dividing of different components is based on their roles in the SOA applications. More often than not, you start with a business problem and then abstract out the services.

These services can be re-used by other applications in the future. Cloud Computing is for IT delivery. The dividing of different services is based on their roles in a software stack that is mostly well defined. You don't need a problem before defining the cloud services. The services can be easily re-used by all applications.

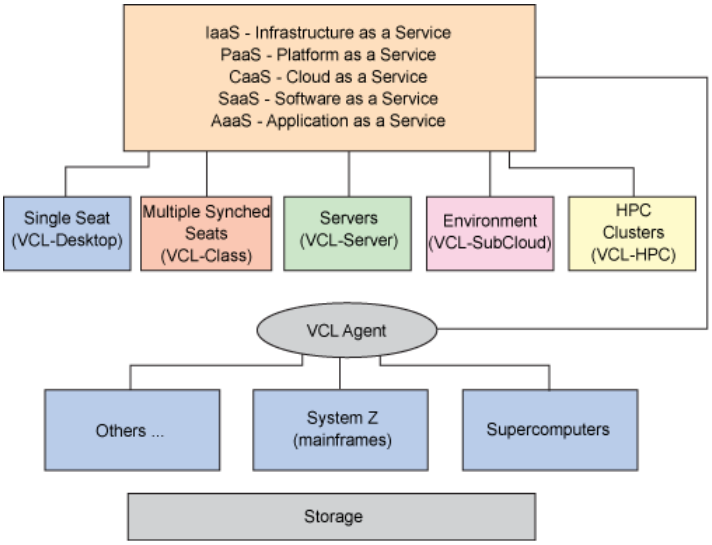

Figure:3

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Virtualization

Virtualization is a technology that allows a physical server to appear to applications as multiple "logical servers."

SOA facilitates cloud computing by making software easier to distribute in the cloud. It can be an alternative to virtualization in server-sharing, or it can use virtualization to improve performance and reliability.

Finally, SOA makes everything a service and thus supports the SaaS model, not only for complete applications but also for components of applications. As SOA principles remake applications, SOA will transform all three technologies.

SOA may be transforming, but from the user's perspective, cloud computing is harmonizing. Many would argue that cloud computing is the unification of virtualization and SaaS, but it's more complicated than that. There will be applications of virtualization that are not

"cloud computing" for years to come, and there will also be SaaS applications that do not use virtualization in application hosting.

All three technologies have their place in managing capital and operations costs for IT. But it does seem likely that cloud computing will become the overarching framework in which most virtualization is applied and that the majority of SaaS providers will employ cloud computing to serve their users most economically and reliably. Using the advanced virtualization and management capabilities of System Center along with partner solutions, you can implement business continuity solutions to minimize downtime and improve service reliability.

Users

a) Support large numbers of users that range from very naive to very sophisticated (millions of student contact hours per year).

b) Support construction and delivery of content and curricula for these users. For that, the system needs to provide support and tools for thousands of instructors, teachers, professors, and others that serve the students.

c) Generate adequate content diversity, quality, and range. This may require many hundreds of authors.

d) Be reliable and cost-effective to operate and maintain. The effort to maintain the system should be relatively small, although introduction of new paradigms and solutions may require a considerable start-up development effort.

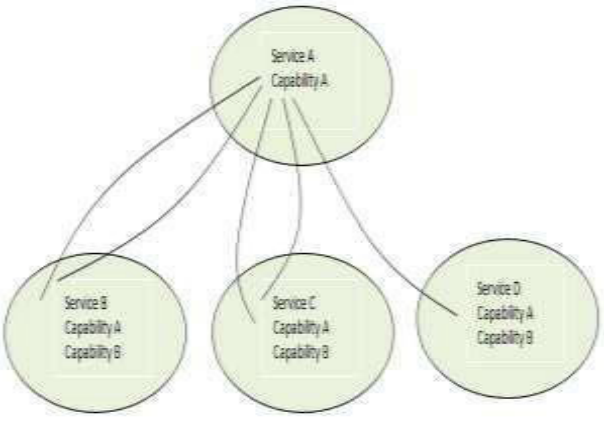

Figure:3

28 Percent of U.S. Organizations are Using* Cloud Computing

Overall, What is the status of cloud computing within your organization?**

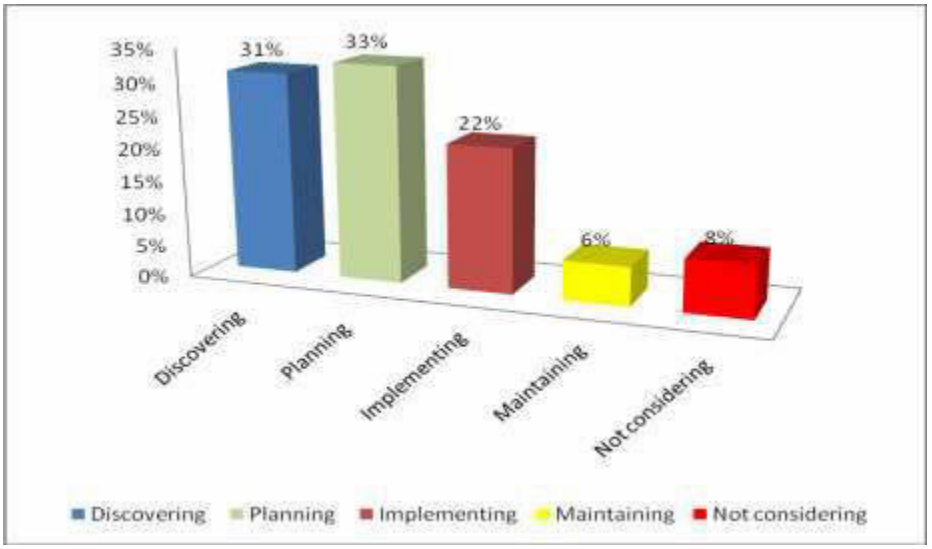

Figure: 4

Developers

The Cloud computing for developers (CC4D) virtual event series helps technical communities learn to solve business and technical challenges in the cloud. Through real-world examples of specific challenges and solutions, as well as live demos of techniques and products, various worldwide audiences can learn more about leveraging the cloud.

Composition

A service composition is a coordinated aggregate of services. These agnostic services are therefore capable of participating in multiple service compositions. This may require some expertise in the construction of images and services, but, for the most part, their work will focus on interfacing with end-users and on provisioning of what end-users need in their workflows. On the other hand, an "Environment" could be a collection of images loaded on one or more platforms. For example, a web server, a database server, and a visualization application server, or a high-performance cluster

End Users

End User Computing Services that creates Business Value for our customers, a great personalized service experience for end users and build a work culture of innovation & collaboration to harness the potential of our employees and partners.

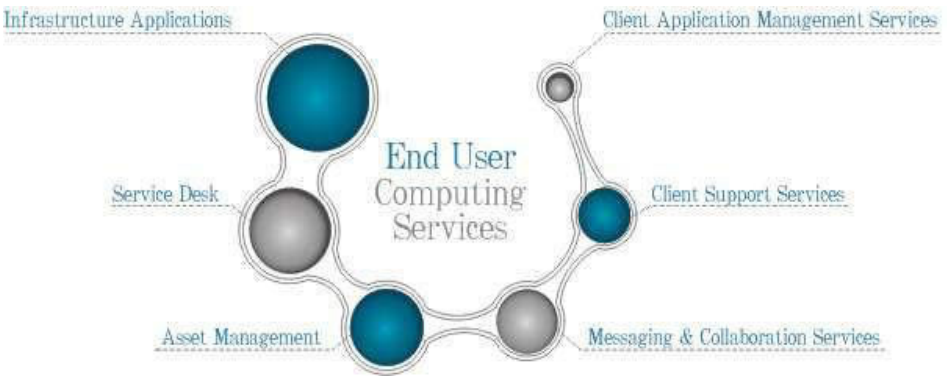

Figure:5

Service Desk – Global Service Desk handling 10mn trouble tickets and 7mn service desk calls per annum in 20 languages. 17 Global delivery centers spread across the world with 7 near shore centers

Client Application Management services – Deliver Application Packaging, Imaging, Software Distribution and Patch Management services in a centralized factory construct. 5000+ Applications packaged and distributed annually.

Messaging & Collaboration Services – Build, operate and provide professional services on email and collaboration platforms like Microsoft Exchange, IBM Lotus Notes. Monitor and support more than 800,000 mailboxes globally

Asset Management – Provide a complete Asset Management Lifecycle service right from ordering to ongoing management and tracking of client assets.

Client Support Services – Provide onsite support for Desktops, Laptops, Printers, Handheld devices at client locations spread globally. Global Network of Client support specialists supporting approximately 3 million client devices distributed globally.

Infrastructure Application – Build and Manage Infrastructure Applications in customer environments. These services include Directory Services, File and Print services, Remote Access Management, Application delivery using Criteria, Microsoft App-V etc.

Implementation (VCL)

This VCL architecture mainly is intended for designing and configuring a cloud computing system that serve both the educational and research missions of the university in a very economical and cost efficient manner.

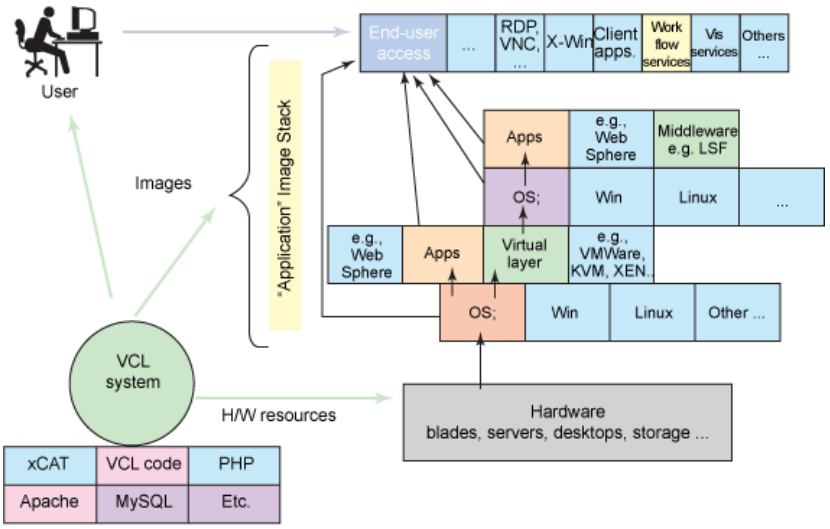

Figure: 6

VCL physical architecture

We have identified some major capabilities of VCL cloud computing with help of the VCL lab performance through diagrams to explain major benefits. Services and support to a wide range of users.

A wide-range of course materials and academic support tools to instructors, teachers, professors, and other educators and university staff Excellent resource utilization depending on different user demands. Variety of diverse service environments Operating cloud infrastructure as an economically viable model

CONCLUSION

It implies a start service in Madhya Pradesh, reduced information technology overhead for the end-user, great flexibility, reduced total cost of ownership, on-demand services and many other things. This paper discusses the concept of "cloud" computing, some of the issues it tries to address, related research topics, and a "cloud" implementation available today. Keywords: "cloud" computing, virtual computing lab, virtualization, utility computing, end-to-end quality of service. Information technology (IT) is its ability to become a true, valuable, and economical contributor to cyber infrastructure. "Cloud" computing embraces cyber infrastructure, and builds upon decades of research in virtualization, distributed computing, "grid computing", utility computing, and, more recently, networking, web and software services. It implies a service oriented architecture, reduced information technology overhead

for the end-user, greater flexibility, reduced total cost of ownership, on demand services and many other thing. Our experience with VCL technology is excellent and we are working on additional functionalities and features that will make it even more suitable for cloud framework.

REFERENCES

I. http://www.ejournal.co.in/gjeis/index.php/GJEIS/article/view/49
II. http://newsroom.cdw.com/features/feature-05-26-11.html
III. http://www.hcltech.com/it-infrastructure-management/end-user-computing
IV. http://www.whatissoa.com/p12.php
V. http://searchunifiedcommunications.techtarget.com/tip/Differences-among-cloud-computing-virtualization-SaaS-and-SOA
VI. http://www-01.ibm.com/software/solutions/soa/newsletter/nov09/article_soaandcloud.html ?
VII. http://graal.ens-lyon.fr/~cperez/web/_media/ens:2_services.pdf
VIII. http://www.mitre.org/work/tech_papers/tech_papers_09/09_0743/09_0743.pdf
IX. http://blogs.vmware.com/vcloud/2010/04/soa-and-cloud-computing-are-they-the-same.html
X. Amazon Elastic Compute Cloud (EC2): http://www.amazon.com/gp/browse.html?
XI. node=201590011, accessed Dec 2008.
XII. ILKAY ALTINTAS, BERTRAM LUDAESCHER, SCOTT KLASKY, MLADEN A. VOUK. “Introduction to scientific workflow management and the Keller system”,
XIII. Tutorial, in Proceedings of the 2006 ACM/IEEE Conference on Supercomputing, Tampa, Florida, TUTORIAL SESSION, Article No. 205, 2006, ISBN:0-7695-2700-0, also given at Supercomputing 2007 by Altintas, Vouk, Klasky, Podhorszki, and Crawl, tutorial session S07, 11 Nov 07.
XIV. D.E. ATKINS ET AL., “Revolutionizing Science and Engineering Through Cyberinfrastructure: Report of theNational Science FoundationBlue-ribbon Advisory Panel on Cyberinfrastructure”, NSF, Report of the National Science Foundation Blue-ribbon

Advisory Panel on Cyberinfrastructure, January 2003, http://www.nsf.gov/od/oci/reports/atkins.pdf

XV. http://online.wsj.com/public/articleprint/SB119180611310551864.html

XVI. http://www.cca-forum.org/,accessed February 2006.

XVII. http://www.cs.wisc.edu/condor/,accessed May 2008.

XVIII. http://www.idt.mdh.se/cbse-book/

XIX. http://www.globus.org/, accessed

XX. http://hadoop.apache.org/core/,

XXI. http://www-03.ibm.com/press/us/en/pressrelease/22613.wss

XXII. http://www-03.ibm.com/industries/education/doc/content/news/pressrelease/2494970110.html

XXIII. http://www-306.ibm.com/software/

XXIV. http://domino.research.ibm.com/comm/

XXV. http://en.wikipedia.org/wiki/Cloud