Revolution of Cloud Computing Universally

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Abstract— Cloud Computing is new emerging technology that has various advantages and it is an adoptable technology in this present scenario. The main advantage of cloud computing is availability, agility, scalability, reliability, flexibility and this technology reduces the cost effectiveness for the implementation of hardware, software and License for Globally. It creates new approach that is service-centric approach. All services are taking from a single point. Industries are investing maximum money to developing of IT infrastructure, maintenance and upgrading their hardware and software to increase their new services for all areas. Now media is switching written form to digital form on large scale through IT service modal. IT service modal by switching media industries owned services and IT infrastructure to pay–per use business model by cloud. It influences the modern trends in cloud computing technology and next generation SaaS, AaaS, IaaS, DaaS, PaaS models. In this paper shows how impact of cloud computing on digital media. Cloud computing will help achieve desired business agility and guarantee quality-of-services through emerging Cloud Computing Transformation Model (CCTM). We will illustrate the cost-benefit analysis of lean IT transformation approach in enterprise collaboration scenario to Cloud Computing Transformation (CCT).

Keywords— Cloud Computing, IT, CCTM, CCT

I. INTRODUCTION

Cloud Computing makes computing power worldwide accessible and provides cloud ilities (Scalability, Availability, Reliability) in resources acquisition. It allows potential scalable provision of services and more effective use of resources in heterogeneous environment. Cloud computing has been projected as the next-generation architecture of IT enterprise, due to its unique features like on-demand self-service, location independent resource pooling, universal network access, rapid resource elasticity, usage-based pricing etc. From users' perspective, including both individuals and IT enterprises, storing data remotely into the cloud in a flexible on-demand, pay per use manner brings appealing benefits relief of the burden for storage management, worldwide data access with independent geographical locations, and avoidance of capital expenditure on hardware, software, and personnel maintenance, etc. [1].

It transfer computing and data away from desktop and laptop into big data centres. All the applications, infrastructure and platform offered as a service over the internet as well as to the actual cloud infrastructure-specially, the hardware and system software in data centres that make available these services on-demand and pay per use. The main reason for popularity of cloud computing are the advancement in broad-band and wireless networking, minimum storage cost, and gradually progress in internet computing software. The computing and communication technology is always amazing in developments, innovations, and transforming the world's functional-structure into great potential; the emergence of both technologies takes the world of computations and communications to new heights. In recent past the communication technology has revolutionized many times, specifically in cloud environment.

II. CLOUD COMPUTING SERVICE ARCHITECTURE

Cloud Computing is an umbrella term used to refer to web-based development and services over internet, group of interconnected computers with different sizes and configuration, provides services to the clients with a single interface. It concentrates the traditional IT resources, controls and manages efficiently for the cloud users. It is the kind of computing which disperses and processes data distributed by virtualized manner; provides resources and computing infrastructure on-demand, pay as much as used and needed, always on!, and anywhere type of network- based computing to its subscribers. Cloud service architectures can be broadly categorized into:
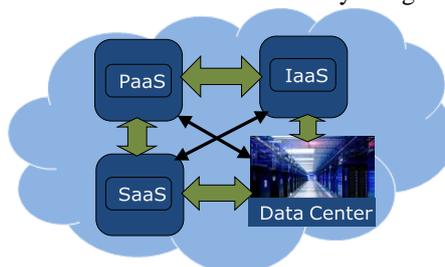

Fig. 1 Cloud Computing Service Architecture

A. Software as a Service (SaaS)

This builds upon the primary IaaS and PaaS provides clients with combined access to software applications. It is a delivery model that provides facility to access the software and its functions remotely as a Web-based service. SaaS lets organizations to access business functionality at a lower cost than for paying licensed applications while its pricing is based on a monthly fee. Organization lives free from tension to handle the set-up, installation, and regularly daily upkeep and maintenance. SaaS is a software distribution model in which applications are hosted by service provider or vendor and its accessibility is to the customer over the network is through the internet.

B. Infrastructure as a Service (IaaS)

It is function of Cloud services. It offers the storage, networks, server hardware, storage, bandwidth, and other essential computing resources to the client access. It is permits the consumer to deploy and run arbitrary software, which can include operating systems and applications.

C. Platform as a Service (PaaS)

This builds upon IaaS and provides clients with access to the basic operating software and optional services to develop and use software applications (e.g. database access and payment service) without the need to buy and manage the underlying computing infrastructure. Consumer can deploy their applications which are developed using programming languages and tools which is support by the service provider, onto the cloud infrastructure.

In addition to the elementary service models, cloud also provides different services such as Network as a Service (NaaS), Hardware as a Service(HaaS), Desktop-as-a-Service (DTaaS),Communication-as-a-Service (CaaS), Security-as-a-Service (SECaaS), Monitoring-as-a-Service (MaaS), Storage-as-a-Service (STaaS), Desktop-as-a-Service (DTaaS), Compute Capacity-as-a-Service (CCaaS), Database-as-a-Service (DBaaS), IT-as-a-Service (ITaaS) and Business Process-as-a-Service (BPaaS).

TABLE I CLOUD SERVICES

Cloud Service Vendors				
IaaS	*PaaS*	*SaaS*	*DBaaS*	*SeCaaS*
Amazon WS	Amazon WS	Abiquo	3X Backup System	Approver
AT&T	Appistry	Accelops	Amazon WS	Awareness Tech.
Blue Lock	App Scale	Akamai	Asigra	Barracuda N/W
Ca Technology	Ca Technology	App Dynamics	Axcient	Cloud Passage
Cloud Scaling	Engine Yard	Apprenda	Carbonite	M86 Security
Data Pipe	flexiScale	Megha Ware	Caringo	McAfee
ENKI	SalesForce.com	Cloud9	Cleversafe	Panda Security
Enomaly	gCloud3	Cloud Switch	Ctera	Ping Identity
GoGRID	GIGA Spaces	Cloud Tran	Doyenz	Qualys
HP	Visual Web GUI	Cumulux	eFolder	Safe Net
Juyent	Google	Eloqua	Seagate i365	Sentrigo
Layered Tech.	GridGain	Financial Force.com	Intronis	Still Secure
Logic Works	LongJump	Intacct	Mezeo's	Syfer Lock
Navi Site	Windows Azure	Market	Nasuni	Symantec
Op Source	Open stack	Netsuite	Nirvanix	Simplified
RackSpace	Orange Scape	Oracle	Acality	Trend Micro
SAVVIS	OS33	Pardot	StoreSimple	Veracode
Terre mark	OutSystem	Salesforce.com	Sugar Sync's	WatchGuard
Verizon	Right Scale	SAP	Vembu	Webroot

III. TRADITIONAL TECHNOLOGY TRANSFORMATION (IT TO CLOUD)

In today's globalization world, integration of ICT with cloud have been evolved and emerged with service-centric technology. To achieve resource pooling, elasticity, minimization of operational cost, outsourcing of critical operations, simplified application deployment, On-demand Services and make computing power universally available. Computing architecture and nature of access changed drastically the format of service-delivery model. Presently cloud has been implementing for business models and occupied global world. It describes a broad movement toward the access of heterogeneous networks, such as the Internet, Wi-Fi, 2G, and 3G etc. Service provider are expending their traditional IT stack and provide optimize facility in the context of cloud traditional computing model has been change from a single-server computing architecture to a distributed, that helps move data and computation to the cloud. It is reshaping the economies and social life of many countries globally at large. In the wake of a global recession, companies are looking for innovative ways to cut costs and differentiate themselves from the competition. However, with the multitude of new technology and service offers on the market, investment decisions are becoming increasingly difficult [2].

"The latest technological shift is toward cloud computing, which offers clients the ability to transform their IT infrastructures, breaking down barriers to innovation" [3].

IV. IMPACT OF CLOUD TRANSFORMATION UNIVERSALLY

A. Services Transformation:(IT Vs. Cloud)

TABLE III SERVICES TRANSFORMATION

Business Operational Considerations	Server Up-gradation Required	Cloud Based
Backup System	No or Inconsistent	
Anti-spam filtering on email	No or Limited	

E-Mail		
E-mail Backup	Not Supported	Included
UPS Power Backup		
Offsite Backup Storage		
Easy Remote Access		
Same Speed & data rate anywhere from home or at work		
Disaster Recovery Plan		
Predictable technology costs		
Connect or establish remote sites easily		
Worry-free, monitored backups		
Servers	Yes	
Physical System Protection	No	Not Necessary
Software Installation	Pre-installed or Pay support	Service Provider
Labor for server setup/installation	Yes	Minimal

B. Cost Transformation:(IT Vs. Cloud)

TABLE IIIII COST TRANSFERMATION

Process	Traditional IT	Cloud Services
Asset Utilization	Data centers service utilization commonly avg. 5-20% measured per yr.	Close to 100% utilization
Hardware	large capital required for setup & maintenance	Decreasing cost, increasing Performance & enhance functionally
Power Efficiency	Heavy investments are usually required to save energy.	Energy efficiency for heavily data centers and processing
Enabling Redundancy	Redundant networking devices, transit connections and physical connections.	Requirements are conveniently included in the simply usage charges.
Security	Capital expenditure for network security device and other regularity compliances	Provide global security
Supply Chain Management	Due to slow pipeline supply time which increase cost	Significant resources available for supply chain and efficient manage.
Personnel Teams	Skill support staff required for hardware procurement and management.	Reduce and refine the manpower requirement to operate IT infrastructure.

The concept of cloud computing has extended promptly through the ICT industry. This service approach provides the required computing resources to its subscribed user's on-demand, elastically, on fiscal basis. It makes computing power universally available and provides flexibility in resource acquisition with reliability and privacy. It allows scalable provision of services and use of resources. According to World Economic forum, we analysis we found that cloud computing has the potential to value up the organizations, industries and even entire economies by:

i. *Accelerating Business Opportunities*: Companies are accelerating the new trends of fashion to create innovative product development and services around the world. It also enhances computing power, ability of organization, customer satisfactions, and resourceful environment on economical/fiscal basis through the cloud.

ii. *Levelling the company size:* Cloud provides resource rich environment to the different organization due to this facilities companies comes under an umbrella infrastructure/platform.

iii. *Supporting for high level technology development:* This emerging economics leapfrog providing technological development to the next-generation IT infrastructure, applications, tools and services on demand, scalable, affordable as per requirement basis.

C. Cloud Computing Major Impact to The Different Industries/ Global Sectors

According to World Economic Forum survey, graph show different   industries are most likely to be impacted by the cloud computing.

Fig. 2 Cloud computing major impact to the different industries/ global sectors [4]

V. CLOUD TRANSFORMATION BENEFITS

Technology have been influences our both personal and professional life. In traditional computing system, software, applications and data are typically installed and stored in local computing environment; whereas cloud offers as services any time (always-on) in static and dynamic environment, often these services offer on-demand through web browser over the internet. C.C is helping of different corporates or sectors to enhance his services and information in global scale, these integrated service technologies provide following benefits which elaborated in two terms.

A. Short Term Benefits
    i.   Reduce IT Infrastructure Cost
    ii.   Improves IT/Business Process Efficiency & Flexibility
    iii.   Improving the quality of end user service experience etc.

B. Long Term Benefits
    i.   Enhance Collaboration & User Experience
    ii.   Facilities Business Agility
    iii.   Drive Productivity Grains
    iv.   Improve Gov't Effectiveness & Contribute to increase GDP Growth
    v.   Lower Cost of Failure
    vi.   Better Services for Citizens
    vii.   Acceleration Innovation
    viii.   Transform Education, R&D and Science
    ix.   Create New Jobs/Business
    x.   Empower Individuals
    xi.   Improve Competitiveness
    xii.   Promote Sustainability
    xiii.   Level Playing Field
    xiv.   Provide Leapfrogging Opportunities.

C. Current and Potential User Benefit by Using Cloud
In the recent survey of WEF, companies are growing at double-digit rates by using cloud services. It has been illustrate significant benefits by adopting Global Cloud Transformation Techniques (GCTT). In fact; companies are not focusing only cost reduction as the most important potential benefit, they indeed to accelerating less expensive computer resources over the internet and ensure better support for creating new product and services to the consumers through GCTT. These two bar graph shown the globally annual job growth rate for the year 2011-2015 in different sectors and the another one express current and potential user benefits by adopting cloud.
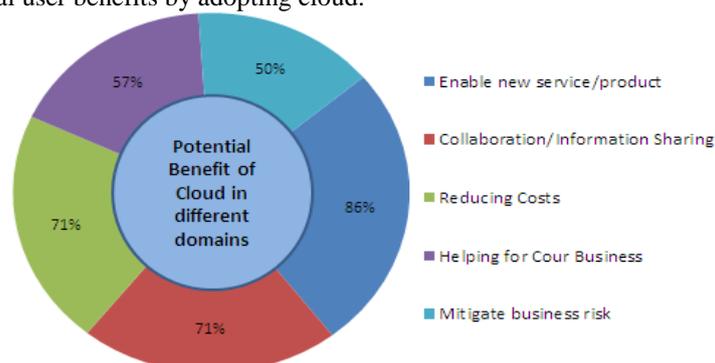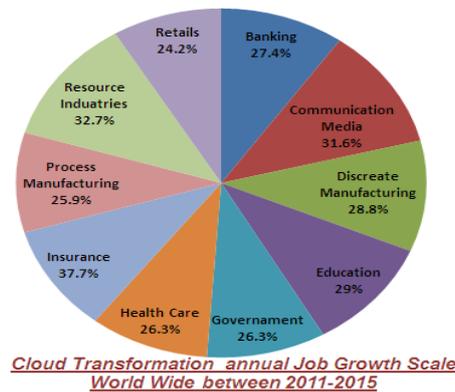
Fig. 3 Cloud Transformation

VI.   THE CONSEQUENCES OF CLOUD TRANSFORMATION/CHALLENGE'S/SECURITY ISSUE

In the quit natural/known fact, privacy or security applicable in the terms of data is more secure in the static environment rather than mobility. To adopting this transformation environment by consumers and service provider are feel these following challenges. With cloud computing, service development faces different challenges, as resource allocation is dynamic and virtually unlimited, even in projects intended to meet "one-off" needs. Critical requirements are now mostly business-related - for example, the capacity to outperform competitors. And that's precisely how IT Managers will solve their implementation dilemma... Where time is not critical, an incremental approach will probably provide the best results; if, on the contrary you need to take up leading market position rapidly (this is the case, for example of MSPs, telecom operators, health sector companies, etc.) a more "radical" approach will be required [5].
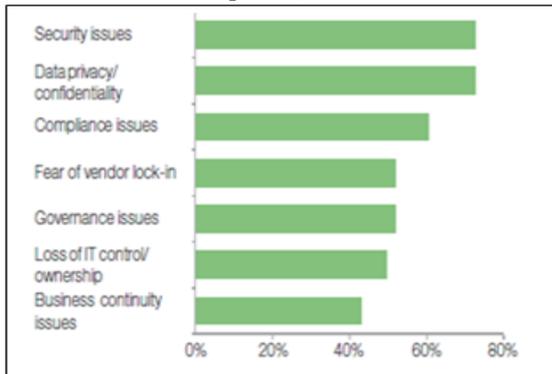

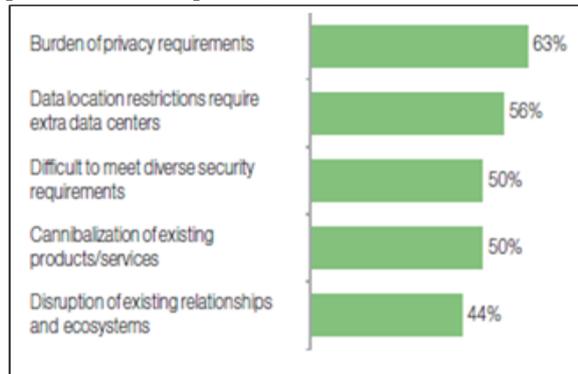Fig. 4 Customer and government major concerns by using cloud [6]   Fig. 5 Cloud Service provider major issues [6]

VII.   CONCLUSIONS

The objective of our research emphases the technology transformation from traditional IT to cloud as a whole computing resources, implies a profound major change. Without doubt, IT is an agent that can bring this level of change. Over long periods of time as IT, most businesses are seriously affected by limited resources, lack of infrastructure, high operational cost etc. However, through GCTS the computing power become the basis for radical business innovation and business models for the significant improvements in the effectiveness for the user. This can also provide sudden a new solutions alter the business landscape. Cloud transformation provides tremendous resourceful environment to the user but substantial issues stand in the way. Our comprehensive study has taken the first step: Defining Traditional Technology Transformation, secondly Impact of Cloud Transformation then Current and Potential User Benefit for industry and governments to consider accelerating cloud adoption and generating a new era for all stakeholders–individuals, businesses and society as an entire economies.

REFERENCES
[1]   M. Armbrust, A. Fox, R. Griffith, A. D. Joseph, R. H. Katz, A. Kon winski, G. Lee, D. A.Patterson, A. Rabkin, I. Stoica, and M. Zaharia,"Above the clouds: A berkeley view of cloud computing," University of California, Berkeley, Tech. Rep. UCB-EECS-2009-28, Feb 2009.
[2]   http://www.capgemini.com/services-and-solutions/challenges/infrastructure-transformation-services/overview/
[3]   http://www.hp.com/hpinfo/newsroom/press_kits/2012/convergedcloud2012/FS_TS_Services.pdf
[4]   http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture_The_Future_of_Cloud_Computing.pdf
[5]   http://community.ca.com/blogs/ittransformation/archive/2011/03/30/two-approaches-towards-cloud-computing.aspx
[6]   http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture_The_Future_of_Cloud_Computing.pdf