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A Survey on Use of Cloud Computing in various Fields

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Abstraction : **"Cloud" computing – a relatively recent term, defines the paths ahead in computer science world. Being built on decades of research it utilizes all recent achievements in various fields. Cloud Computing has become a scalable services consumption and delivery platform in the field of Services Computing. Cloud computing is a better way to run your business. Instead of running your apps yourself, they run on a shared data center. Cloud computing can help facilitate easier access and distribution of information among the various medical professionals who may come in contact with each individual patient. Cloud Computing is a term that use almost all fields related to the computer trends. Cloud computing are use in Entertainment, Medical, Military Operations, Security issue, Business and finance etc. Here in this paper I am trying to describe the use of Cloud computing in various fields.**

Keywords : **Cloud Communication, Public & private Cloud, ODE, SLA, ERP, CRM.**

I. INTRODUCTION

Cloud Computing has become a scalable services consumption and delivery platform in the field of Services Computing. Cloud computing is the use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet). The name comes from the use of a cloud-shaped symbol as an abstraction for the complex infrastructure it contains in system diagrams. Cloud computing entrusts remote services with a user's data, software and computation. The technical foundations of Cloud Computing include Service-Oriented Architecture (SOA) and Virtualizations of hardware and software. The goal of Cloud Computing is to share resources among the cloud service consumers, cloud partners, and cloud vendors in the cloud value chain. The resource sharing at various levels results in various cloud offerings such as infrastructure cloud (e.g. hardware, IT infrastructure management), software cloud (e.g. SaaS focusing on middleware as a service, or traditional CRM as a service), application cloud (e.g. Application as a Service, UML modeling tools as a service, social network as a service), and business cloud (e.g. business process as a service).

A hybrid computing model enables an organization to leverage both public and private computing services to create a more flexible and cost-effective computing utility:

- The public cloud is a set of hardware, networking, storage, service, and interfaces owned and operated by a third party for use by other companies or individuals.
- A private cloud is a set of hardware, networking, storage, service, and interfaces owned and operated by an organization for the use of its employees, partners, and customers.
- In a hybrid cloud environment, an organization combines services and data from a variety of models to create a unified, automated, and well-managed computing environment.

Whether your cloud is public, private, or hybrid, you'll need a cloud provider that provides elasticity, scalability, provisioning, standardization, and billed usage. Elasticity is important because it means that you are able to use a service for a long or short period of time based on need. You can add more services from a self-service portal rather than wait for IT to do the heavy lifting for you. Increasingly, as companies begin to understand that they will use a combination of different platforms to meet different business needs, the hybrid cloud will become the foundation for computing. The advent of the hybrid cloud will also help redefine the purpose and use of the traditional data center as well.

1. Cloud Computing in Business

Cloud computing is both a business delivery model and an infrastructure management methodology. The business delivery model provides a user experience by which hardware, software and network resources are optimally leveraged to provide innovative services over the Web, and servers are provisioned in accordance with the logical needs of the service using advanced, automated tools. The cloud then enables the service creators, program administrators and others to use these services via a Web-based interface that abstracts away the complexity of the underlying dynamic infrastructure.

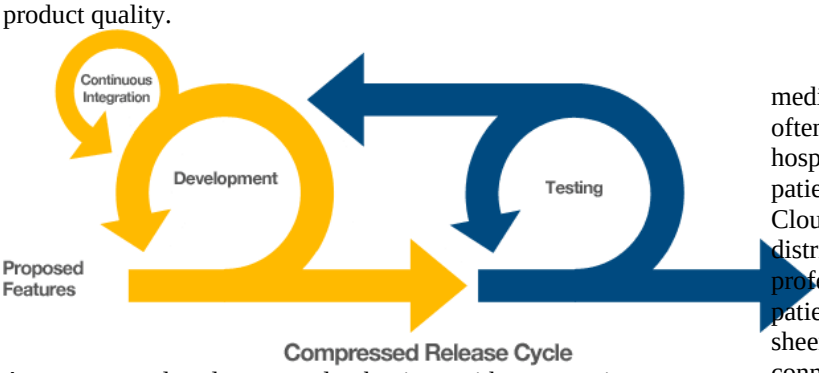
The infrastructure management methodology enables IT organizations to manage large numbers of highly virtualized resources as a single large resource. It also allows IT organizations to massively increase their data center resources without significantly increasing the number of people traditionally required to maintain that increase.

For organizations currently using traditional infrastructures, a cloud will enable users to consume IT resources in the data center in ways that were never available before. Companies that employ traditional data center management practices know that making IT resources available to an end user can be time intensive. It involves many steps, such as procuring hardware; finding raised floor space and sufficient power and cooling; allocating administrators to install operating systems, middleware and software; provisioning the network; and securing the environment. Most companies find that this

process can take upwards of two to three months. Those IT organizations that are re-provisioning existing hardware resources find that it still takes several weeks to accomplish. A cloud dramatically alleviates this problem by implementing automation, business work flows and resource abstraction that allows a user to browse a catalog of IT services, add them to a shopping cart and submit the order. After an administrator approves the order, the cloud does the rest. This process reduces the time required to make those resources available to the customer from months to minutes.

2. Speed Up Development in the Cloud

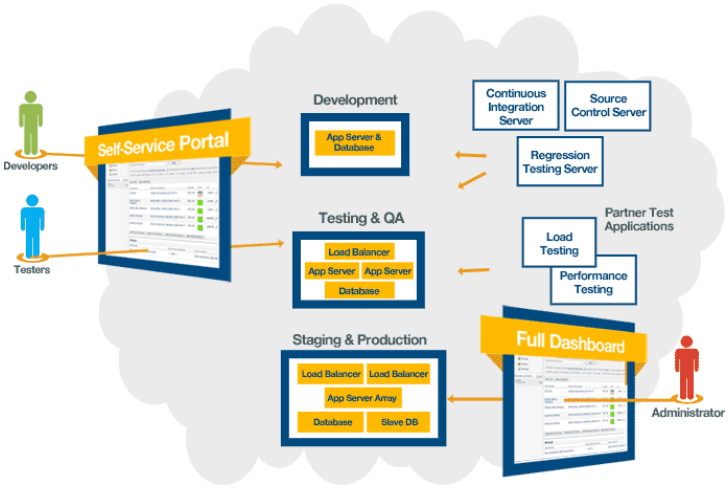
Public and private clouds provide unprecedented ease for developers to build, update, and test applications with lower cost and compressed release cycles. Every company small or large is pressed to get applications into the hands of users faster. Yet, the process of accessing and configuring resources is not being accelerated at an equal pace and continues to take up valuable time. Organizations want to provide developers and testers with access to available, easily configured resources and can reduce cycle times and improve product quality.



A compressed release cycle begins with a continuous integration environment. Using RightScale Server Templates, such as the Jenkins Continuous Integration Server Template, you can deploy continuous build, test, and monitoring for Java, Python, and Ruby application development.

The Right Scale Enterprise Edition enables you to spend less time configuring hardware and managing resources, less time fixing errors and reworking code, and more time on experimenting, developing, and testing. The Enterprise Edition includes two different user interfaces: a Self-Service Portal designed for developers and testers to launch servers in the cloud, and the full Right Scale Dashboard designed for systems administrators and architects to customize the pre-configured environments delivered with the solution pack. The Enterprise Edition ensures:

- **On-demand resources** are available when you need them, using a self-service portal that works across clouds.
- Standard configurations of Server Templates, scripts, and recipes are available from the Multi Cloud Marketplace or are sharable within your account.
- **Consistent environments** are ease to create and clone for testing.



3. Cloud Computing in Medical Fields

Within a hospital, indeed within the majority of medical practices, patient charts and medical histories are often kept within a computer system of some kind. In a hospital this is especially useful as the sheer number of patients within the building at any one time can be daunting. Cloud computing can help facilitate easier access and distribution of information among the various medical professionals who may come in contact with each individual patient. In current vast hospitals, servers are connected, but the sheer amount of information and computers that must be connected is staggering. A cloud based system will improve information sharing by allowing everything to be hosted in the same place, allowing a doctor to input test results in the lab, instantly updating the chart of a patient in a completely separate wing. Similarly, it can allow offsite buildings and treatment facilities like labs, doctors making emergency house calls and ambulances, to have and update information remotely, instead of having to wait until they can access a hospital computer.

Cloud computing can also be greatly beneficial to private practice doctors as well. The mobility option in this case may be even more important than in hospitals. While you may see a patient for a yearly physical, or to treat non-emergency illnesses, a sudden injury or disease will send that patient to an emergency room, not your office. With a cloud based server, you could integrate your own system with the local hospitals, and when a patient of yours is admitted, your own files could be updated immediately. Similarly, if you were to go and treat this patient in said hospital or in their home for whatever reason (such as a home birth) you'd not only be able to immediately and remotely access their records, but request assistance or, in the case of the birth, immediately add the new patient.

Cloud computing is a relatively new way to host information, and as such, the benefits for every individual business isn't

always immediately obvious, but for a field like medicine, it's difficult to find any downsides.

4. Cloud Computing in Education:

It is one of the fastest-growing industries in the world. The need and demand of education never goes down. Cloud computing in education opens avenues for better research, discussion, and collaboration. It also provides a software desktop environment, which minimizes hardware problems. Cloud computing also enables classes to be run on remote locations.

The benefits of cloud computing are that outside entities might be more sophisticated at managing personal data. These entities may be able to manage data more inexpensively and effectively than the educational institution could do itself. In many cases, cloud computing providers can provide better security than the educational institutions can.

The risks of cloud computing are that educational institutions no longer have as much control over the personal data. They must rely on the cloud computing provider to have the appropriate practices and policies to ensure that data is properly maintained, handled, used, or disclosed.

One risk is that a cloud computing provider can outsource some functions to countries that have little to no legal privacy protections. In one instance, a university medical center outsourced transcription of its medical records to a company in California, which then subcontracted with a person in Florida, who subcontracted with a person in Texas, who ultimately subcontracted with a person in Pakistan. The person in Pakistan wasn't paid by the person in Texas, so she wrote to the medical center and threatened that she would expose all the records unless the medical center got involved and made the Texas person pay. This example illustrates how easy it is to lose control over information when it is outsourced.

There are benefits and risks to cloud computing, but the benefits can be enhanced and the risks greatly reduced if educational institutions take care and vigilance in selecting cloud computing providers and in monitoring the relationship to ensure that the provider is adequately protecting the data.

The Family Educational Rights and Privacy Act (FERPA) unfortunately provides little guidance about the selection of cloud providers and the management of these relationships. According to Department of Education, "nothing in FERPA prevents an educational institution from contracting with a person or entity outside the institution to perform services that the institution would otherwise provide for itself." FERPA merely requires one condition - that "the party to whom the information is disclosed will not disclose the information to any other party without the prior consent of the parent or eligible student."

But there are many other important responsibilities for cloud computing providers that FERPA ignores, such as providing for appropriate security and having adequate accountability architecture in place. That architecture consists of having officials responsible for the privacy and security of the data (data stewards), doing routine assessments of risks, having a meaningful system of oversight and monitoring to ensure compliance, and having a training program for employees to minimize security lapses and mistakes. I provide such training programs through my company, Teach Privacy, and I am doing so because I am a strong believer that education can work. Many privacy and security incidents are caused not be technical issues but by the human factor - the small errors people make out of carelessness or ignorance that can lead to big problems. Educational institutions should insist on cloud computing providers that provide such education - after all, educational institutions should be ardent believers in education.

Prior to engaging in business with a cloud computing provider, an educational institution should conduct due diligence on the provider and make sure that the provider has a good reputation and good privacy and security practices. The educational institution should ask the provider for details about how it stores the data, how it protects the data, and where that data is stored, as the data might be stored in a country where the government can access data without adequate restrictions.

When contracting with a cloud computing provider, an educational institution should be sure that the contract have sufficient provisions to ensure that the data is protected. An educational institution should never just outsource it and forget about it. Even when the data is outsourced to others, the buck always stops with the educational institution, which remains the primary institution with responsibility over that data. A privacy or security incident at a cloud computing provider doesn't just tarnish the reputation of that provider, but it also can injure the reputation of the institution that trusted the cloud computing provider - especially if the institution didn't do enough to ensure that the provider was taking adequate care of its data.

In essence, giving data to a cloud computing provider should be viewed as akin to sending children to daycare. Great care and vigilance is required both in selecting a provider and in ensuring that the provider meets its obligations and performs well.

What should contracts with cloud computing providers require? I recommend the following:

- The cloud computing provider should agree to maintain the confidentiality of the data.
- The cloud computing provider should have appropriate technical, administrative, and physical security safeguards to protect the data.
- The cloud computing provider should destroy all personal data that is no longer needed. If the relationship with the cloud computing provider is terminated, the provider should not retain any of the personal data that it had previously processed for the educational institution.
- The cloud computing providers should abide by the educational institution's privacy policies.
- The cloud computing provider should have appropriate training of its employees regarding following the educational institution's policies and safeguarding the security of the data. Policies are meaningless unless there is training to back them up.
- If cloud computing providers desire to subcontract any of their functions to other cloud computing providers, they should be required to first seek the educational institution's prior approval.

- The educational institution should circumscribe the ways in which the cloud provider can use the data. Data should only be used for the purposes related to providing the cloud computing service. If the cloud provider engages in uses for other purposes, these purposes should be clearly defined and limited. Educational institutions should be careful when authorizing other uses, as such uses could conflict with FERPA or other federal or state laws. Any such uses should be incorporated into the privacy policies of the educational institutions when they gather the data so that people are on notice about them.
- The educational institution should ensure that they can impose appropriate sanctions upon the cloud computing providers if the providers fail to live up to their requirements to provide good privacy and security.

Once the contract is underway, that isn't the end of the educational institution's responsibilities. The educational institution should engage in routine assessments about how cloud computing providers are performing in their duties to provide privacy and security safeguards.

5. Marketing Companies:

Today's world is all about marketing and cloud computing takes marketing to a whole new level. The seller can have a marketplace without the need of investing in extra hardware, software, license fees etc.; and the buyer has more options for products.

In a research report titled 'India Cloud Market Overview, 2011-2016', IDC has looked into cloud adoption in India and its future potential. In 2011, the cloud computing market was estimated at $535 million and this will reach $909 million by this year-end, according to the IDC study.

It is a market that is fast maturing and seeing many new entrants with a broad range of investments/solutions taking key roles in the cloud computing ecosystem, said Venu Reddy, Director IDC Centre for Consultancy and Research. The study estimated that from 2013-16, the Indian cloud computing market will grow at 50 per cent every year.

"Adoption across all types of companies will further intensify growth and gradually we will see even core applications moving to cloud faster," said Reddy.

He cited the instances of HR applications that are beginning to be hosted in the cloud. The growth in India's cloud market will be both by larger companies and smaller ones. "Large organisations are increasingly feeling the pinching need to assess their cloud readiness and maturity levels. This would provide a boost to cloud computing consulting services in the next two years, said Reddy.

Cloud computing is transforming the way marketing gets done today. Buyers are spending more of their time online, searching for information, interacting with like-minded colleagues and friends over cloud-based social networks and having their own content hosted in the cloud. Offline marketing techniques continue to plummet in their effectiveness, even as new cloud-optimized marketing strategies such as social media, paid search and search engine optimization deliver both short and long-term results.

The Marketing Cloud is a collection of cloud-based marketing services that make internal marketing functions more efficient and external marketing programs more effective. The Marketing Cloud™ is where successful organizations are running their marketing programs, delivering fast and easy access to powerful enterprise cloud computing capabilities – without the cost, risk and complexity of traditional marketing platforms.

6. Online Entertainment:

Most people come on the internet for entertainment; therefore, cloud computing is the perfect place for reaching to a varied consumer base. Cloud-based entertainment can reach any device be it TV, mobile, set top box, or any other form. Better clarity and sound quality gets cloud entertainer more customers.

- Televisions have come a far way from their monochromatic ancestors of the 1930's to become the modern age's ultimate home entertainers. Demands and expectations of the consumers have evolved tremendously to put a strain on the traditional mediums of entertainment, i.e. audio and video. Moreover, the advent of internet and has created another dimension in home entertainment – lets call it "On Demand Entertainment" (ODE). True ODE means consumers will be able to watch, listen, play or read whatever they want whenever they want.
- The consumers of Televisions now have options of going on the Internet and search for ODE including (but not restricted to) games, news, video and audio. Internet giants like Amazon, Hulu, Netflix and Youtube have started cutting into Television industry's profits and have become a major force to reckon with in home entertainment segment.
- In a parallel development, consumers now want seamless integration and convergence between the new and the old media of entertainment. This expectation has led to innovation in Television industry in the form of IPTV, satellite TV and internet enabled TVs. These technologies strive to provide ODE as well as try to fulfill the demand for a unified entertainment device. However, true ODE is still a distant dream because of the strain it puts on the storage and computation power of the back-end data centers.
- Cloud Computing or internet based computing, which provides on demand storage and compute power to be billed in a pay-per-use basis, comes as a perfect strategic fit to solve the puzzle of ODE. Cloud Computing can provide a solution to the issue of huge requirements in compute and storage to provide true ODE.

This post describes how Cloud Computing can be used to deliver true On Demand Entertainment, using

some specific use-cases of:

- On Demand Gaming
- Ubiquitous Media Playback
- Online Personal Media Store

6.1 The Workings!!

Entertainment today includes much more than the traditional media of books, Television and Radio. As we discussed earlier, ODE has become a major expectation now-a-days. Also, people are now looking for a single device which can take care of all their entertainment needs. Televisions are facing some serious competition in this race for a unified entertainment device from hand held gadgets and Internet. Televisions need help of modern technology to break to the fore-front of this race. Cloud Computing is one such technology which can tremendously help the Television industry.

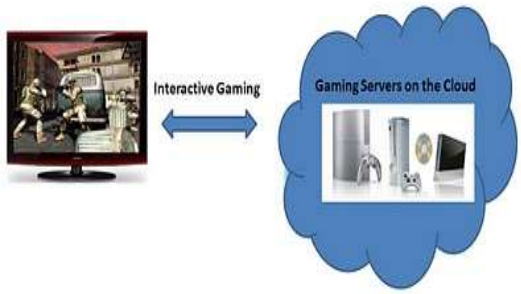
According to Wikipedia:

Cloud Computing is Internet-based computing, whereby shared resources, software, and information are provided to computers and other devices on demand, like the electricity grid.

This on-demand Cloud of servers, generally called the cloud, can provide for the huge hardware requirements for some interesting use cases in Television industry:

6.2 On Demand Gaming:

Games are very compute intensive applications. So much so that they have dedicated platforms built for serious gamers. Televisions too have in-built games but not of the class of "Core Games". This is because core games require huge compute power that Televisions can't provide.



Now that Televisions have become internet enabled, we can use the compute power of the Cloud to do the computation at the back-end. We can push the gaming consoles on the cloud. All the user interactions can be pushed onto the Cloud; the cloud will compute based on the game rules and send back the results for the Television to display.

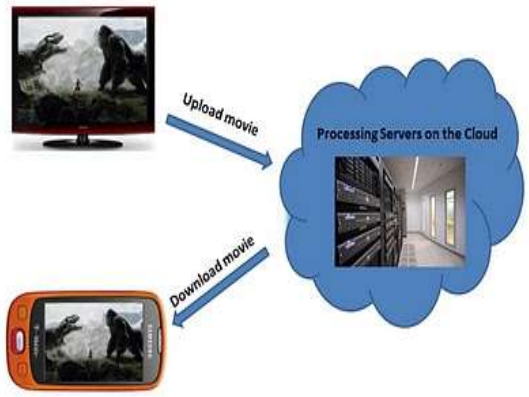
This can be a disruptive product in the gaming industry as this will give rise to true multi player games, where players join and leave the games as and when they will. Anyone with an internet enabled Television set can join the game as dependency on expensive gaming consoles will end.

6.3 Ubiquitous Media Playback:

Another interesting area of application of Cloud Computing in entertainment industry is of Ubiquitous Media Playback.

Let's take an example:

User is watching a movie on his Television when he suddenly gets an urgent call to go somewhere. The movie is at a very interesting phase and he doesn't want to miss it. He can simply activate his “Ubiquitous Media Playback” feature with the push of a button and the movie starts playing back on his hand held gadget.



For this to become reality, all that is needed is that both his hand held gadget and Television have internet access. The Television starts uploading the movie (from the point where it was stopped) to the cloud; the cloud converts the movie to be fit to playback on his hand held gadget and streams it to the gadget. The gadget resumes playing the movie from the same point.

Thus, a simple application of the power of cloud computing can enhance the viewer experience manifolds.

6.4 Online Personal Media Store:

People now try to keep all their media in digital format. They store it on hard disks, CDs, DVDs and BDs. But it still forms a bulky collection with the chance of loosing their data always lingering on top of their mind. What if they had a Personal media Store on the Cloud? What if they can use their Televisions to store all they want on the cloud?

This can be possible. Televisions connected to the Internet can be used to dump all the personal media on the cloud. The Cloud can then sort and organize the media under various categories and make a searchable index of all the user content. This data can then be customized according to the display and other capabilities of all the user’s devices. The user can then access this library of data using any device he wants.

This can be a pay per use service which can be very easily commercialized.

These are just a few use cases which illustrate the power of Cloud Computing in home entertainment. If we take a sweeping look at the whole home entertainment landscape, there would be thousands of applications of this tremendously powerful technology

7. Information Technology:

The IT industry thrives on information and cloud computing provides the perfect platform for testing of new software and techniques. The use of cloud computing is rapidly growing, and so is the literature on the technical issues of implementation. Our knowledge of the managerial implications of cloud computing, however, still lags far behind. This paper examines the phenomenon of cloud computing, places it in the context of other major changes in Information Technology (IT) and explores the potentially revolutionary transformations and challenges it brings to management. The paper starts by analyzing the IT pendulum of centralization and decentralization along a few major periods:

- Mainframes and batch transaction processing (e.g. financial systems), fully centralized IT, end-users receiving outputs;
- Mainframes and online transaction processing, IT still centralized but end-users interacting with the system (e.g. ATMs, online reservation systems);
- PCs, end-user computing and internal business decentralization;
- Web 1.0, mass decentralization and full access to e-mail, home banking, online shopping, social interaction, etc.;
- Web 1.0 plus outsourcing, where the front end of the business moves to the web, with non-competitive transaction processing systems and support being commoditized and located anywhere; and
- Web 2.0 plus cloud computing, with virtualized organizations using web 2.0 tools, net PCs, mobile technology and cloud computing services.

After this contextual overview, we examine the definitions of cloud computing and its major components:
hardware (INTEL, IBM chips to support virtualization); services (Google, Amazon.com); applications (SaaS, Software-as-a-Service) and virtualization (VMware), or their combination (Citrix). We then explore the managerial implications of cloud computing and conclude by arguing that cloud computing represents a major IT change, transforming the way IT professionals work, and also a potential managerial revolution, with a fundamental change in how managers conceptualize and conduct business.

8. Finance and Banking:

As the international market grew so did the need for a more condensed and easier financial reach. Cloud computing eliminates the need for having a separate banking portal and client database for every location. This means faster and better business.

Despite the slow adoption of cloud computing by the banking and financial services industry with security and reliability being the major concerns, financial institutions are quickly resorting to cloud-based services to achieve increased agility and lowered total cost of ownership (TCO). According to IDC, worldwide revenue from public IT cloud services exceeded $21.5 billion in 2010 and is expected to reach $72.9 billion in 2015. There is an emerging trend in which financial institutions are embracing “cloud solutions” as not just a ‘me-too’ option, but as solutions that yield competitive advantage due to shorter cycles of time to market for products and services.

Over the years financial institutions typically have been consumers of cloud-based solutions across generic and non-core services like virtualization, datacenter consolidation, storage and disaster recovery. Many financial institutions are either planning or have implemented in-house private clouds for sensitive consumer data and are utilizing the public cloud for generic services. As cloud computing capabilities mature and become more reliable, multi-tenancy and hybrid cloud models will drive increased adoption of cloud-based solutions that are focused on core services and achieve cost efficiencies and scalability.
Below are a few ways in which cloud-based solutions are transforming the way financial institutions engage with their customers:

8.1 On-Demand BI

BI solutions around data scrubbing, predictive modeling and analytics are gaining importance for banks as they fine-tune strategies to improve profitability while increasing revenues in a highly competitive market. The insights provided by analytical reports augment banks’ capability to invest in channels that offer greater potential of ROI and are flexible to market demands and customer behavior. The ability to have access to flexible computing capacity can obviate the need to plan, procure, configure and deploy IT systems with associated costs, lead-times and financial risks. As a result, financial institutions will recognize significant benefits through lower operational costs, increased flexibility and deployment capabilities, thereby realizing improved time-to-market.

8.2 Core Banking – SaaS

Core banking solution (CBS) typically provided banks with lower cost of operations while yielding significant efficiencies. Microfinance institutions usually have a customer base with large volumes of transactions that are of low value. Implementing CBS for these institutions, on one hand will help in reduced cost of operations and make it an economically viable operating model and on the other ability to reach out to larger rural population. Temenos’ T24 Core banking system, now available on Windows Azure development platform (Software-as-a-Service), has enabled microfinance institutions in Mexico to reduce costs by adopting a pay-as-you-go pricing model. This allows them to do away with the deployment and maintenance of hardware and software associated with traditional solutions.

8.3 Accelerating Financial Inclusion

Smaller banks, typically with limited budget and resources, have been unable to serve their customers in a cost effective manner due to prohibitive costs of operations. Shamrao Vithal Co-operative Bank (SVC) has helped to remedy this by building a Federated Cloud which is helping these smaller banks to consume shared resources including hardware, software and banking software., The infrastructure for each bank is kept in a separate work area with appropriate security controls to maintain confidentiality and integrity of each bank. The resulting lower TCO for the banks will help them extend financial services like no-frills savings account and insurance products to under-banked population and other sectors, particularly in the emerging markets.

8.4 Enabling Enterprise Mobility

To remain competitive, financial institutions have to deploy innovative technologies and support multiple channels of distribution to engage their customers. Ability to access data and information anywhere and anytime will empower employees of financial institutions to respond faster to the customers' needs. By moving the internal apps to a public cloud managed by Google apps, BBVA, one of Spain's largest banks, responded to the growing mobility needs of the bank's workforce while reaping the benefits of cost savings. This was possible because of lower upfront IT CAPEX investments, increased efficiencies linked to scalability of cloud deployments and reduced risks linked to IT deployments by transferring (in part) to cloud service providers.

Cloud computing, a disruptive innovation, can play a transformational role in enabling financial institution to serve and engage with their customers at lower costs and higher operational efficiencies. Additionally, cloud computing technologies can allow companies to respond faster than the competition with quicker time-to-market.

9. Telecommunication:

Telecommunication companies can use cloud computing to provide both private and public cloud networks to customers and organizations for domestic and commercial purposes. hen we use Cloud Computing in Telecommunication field so its known as Cloud Communication. Cloud communications are Internet-based voice and data communications where telecommunications applications, switching and storage are hosted by a third-party outside of the organization using them, and they are accessed over the public Internet. Cloud services is a broad term, referring primarily to data-center-hosted services that are run and accessed over an Internet infrastructure. Until recently, these services have been data-centric, but with the evolution of VoIP (voice over Internet protocol), voice has become part of the cloud phenomenon.

As telecommunication architectures move towards a more cloud-oriented structure, there will be more demand on self-services. This is even more significant in the mobile telecoms where people are now basically utilizing the cloud as the processing power unit for their mobile devices, turning them into high performance utility tools.

9.1 Using the Communications Services

When in the cloud, communications services can extend their capabilities, or stand alone as service offerings, or provide new interactivity capabilities to current services. Cloud-based communications services enable businesses to embed communications capabilities into business applications, such as Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) systems. For "on the move" business people, these can be accessed through a smartphone, supporting increased productivity while away from the office. These services are over and above the support of service deployments of VoIP systems, collaboration systems, and conferencing systems for both voice and video. They can be accessed from any location and linked into current services to extend their capabilities, as well as stand alone as service offerings.

In terms of social networking, using cloud-based communications provides click-to-call capabilities from social networking sites, access to Instant Messaging systems and video communications, broadening the interlinking of people within the social circle. Accessing through Web APIs Accessing communications capabilities in a cloud-based environment is achieved through APIs, primarily Web 2.0 RESTful APIs, allowing application development outside the cloud to take advantage of the communication infrastructure within it (see Figure 3).

10. Security:

The computer and IT industry are forever plagued by hackers and other security attacks; therefore, security business will always be very much in demand. Security on cloud computing cuts down the investment cost and also decreases the need of extra space on every system.

10.1 User Authentication

This is all about access and who accesses the data whether in transit or storage. Since cloud computing is usually done beyond the clients' firewall, there's always that fear of putting data 'out there'. Traditionally, businesses store their data on physical servers in their premises and the hardware would need an on-site access to compromise or breach the data and this has been seen as a deterrent to hacking and illegal access. User authentication is still one of the main fears despite the fact that cloud providers ensure data encryption besides employing necessary safeguards to monitor access.

10.2 Data Protection

No company would ever want to expose themselves to any risk concerning their data (in transit or in storage) because the ramifications of this are too great to even imagine. Data that are often closely guarded include both internal and external data that touch on the company and client information respectively. If a company's security process is called into question, clients will lose confidence in their services and this

will affect the overall turn-over, even put the entire company out of business.

10.3 Data Breach, Damage and Loss

There's a perceived threat to data in cloud because of varied reasons and one of them is fears of data loss, breach or damage. This is one security jitter however that has been counter-checked with cloud data back-ups and multiple server storage. In fact, data in cloud is less prone to breaches and physical damages like fire, floods, etc that are usually a risk in physical servers

Failure to comprehend the whole idea of cloud computing is also proving to be a challenge especially among businesses seeking to use the service for the first time. This is precisely why businesses and organizations are being encouraged to allay perceived security fears and try to exploit the positives of cloud computing.

But even as the fears are sustained across the business setting, professional cloud computing providers are investing colossal amounts of their budgets to implement high security solutions in efforts to lock clients' resources in high security data centers accessible only to authorized entities.

Here are some factors to consider before choosing the right cloud storage service.

Geography of the storage: You must talk to the storage vendor to understand where your data is going to be stored. This is very important for your disaster planning. For instance, if hurricane is a major threat to your primary data storage and your backup provider has its datacenter in Florida, then it might be a good idea to consider the alternatives. Ideally the backup storage center should not be affected by the same disasters (hurricane, terrorism, earthquake, fire). You must also be aware of the regulatory limitations in certain industries (like finance, defense and healthcare) that might prevent your data from being stored in an offshore location.

Public cloud vs Private Cloud: While public cloud can be a good option for small enterprises with lesser data storage needs, for a large enterprise it might not always be a good option. This is due to the need to transfer massive amounts of data over the Internet.

Knowing the versioning and execution of backup: You must understand how the data is stored and versioned. In some cases, the service providers might offer only full backups instead of a more smart incremental backup solution. A full backup is both time consuming and costly in terms of managing the storage and network bandwidth consumption. If versioning is available, you must understand how the versioning works and how it can be integrated with your data management.

Encryption and Information Security: The data stored in the cloud must be encrypted and you must know how the encryption keys are accessed. The service provider must also follow the industry standards to provide the best data security.

Understanding the Service Level Agreements (SLA): When choosing the service provider, take time to understand their SLAs and make sure it is in line with your requirements. You must know the data availability agreement and the expected time to restore the content.

Conclusion:

This paper showed the basis of Cloud Computing, and its possibilities of use in the various fields. The concept of cloud computing comes from the network diagrams illustrating the Internet as a cloud, where it is not possible, or not important, to know the information path. While the main reasons for adopting services based on cloud computing are cost saving, flexibility and start-up speed, there are still doubts about the security guarantees and the portability and integration options offered by this model of services.

This paper illustrates the basic field where cloud computing is use and the criteria of cloud computing its features and the IT industries accept this fields. Cloud computing is changing the way IT departments buy IT. Businesses have a range of paths to the cloud, including infrastructure, platforms and applications that are available from cloud providers as online services. Many people may be confused by the range of offerings and the terminology used to describe them and will be unsure of the risk and benefits.

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