

Cloud in Banking Sector

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Abstract: Cloud computing is known as on-demand computing and one of the latest developments in the IT industry. It provides the full scalability, reliability, high performance and relatively low cost feasible solution as compared to dedicated infrastructures. Security of Cloud computing is a sub-domain of network security, computer security and information security. This paper presents the role to improve cloud security and how cloud computing is impacting the Banking sector and what that management need to focus on when developing a strategy for their organization's adoption of cloud computing.

Keywords: cloud computing, types of cloud models, cloud-based service offerings Bank's, banking on cloud, implementation of cloud computing technology under banking system, advantages, conclusion.

1. Introduction:

Cloud is making the things virtualized. Everything which is on the cloud is under the control of third party and provides every service on demand. Today, driven in large part by the financial crisis gripping the global economy, more and more organizations including banking sector are turning toward cloud computing as a low-cost means of delivering quick-time-to-market solutions for mission critical Operations and services. With the advent of cloud computing there is no need to buy heavy and costly Software by the user. All these are hosted by the big giants of IT industry and being provided as a service to the user as payper user basis. Cloud is one step above the virtualization. It adds one more virtual layer between the user and physical components used for computation. Virtualization embeds in the core of cloud computing, and is used in the data centers design. This paper will discuss the various pros and cons of cloud computing in banking sector and also the various features of this technology related to the banking sector.

2. What is the loud Computing?

Cloud computing is a type of Internet-based computing that provides shared computer processing resources and data to computers and other devices on demand. It is a model for enabling ubiquitous, on-demand access to a shared pool of configurable computing resources (e.g., computer networks, servers, storage, applications and services),^{[1][2]} which can be rapidly provisioned and released with minimal management effort. Cloud computing and

storage solutions provide users and enterprises with various capabilities to store and process their data in either privately owned, or third-

party data centers^[3] that may be located far from the user—ranging in distance from across a city to across the world. Cloud computing relies on sharing of resources to achieve coherence and economy of scale, similar to a utility (like the electricity grid) over an electricity network.



3. Types of Cloud Models:

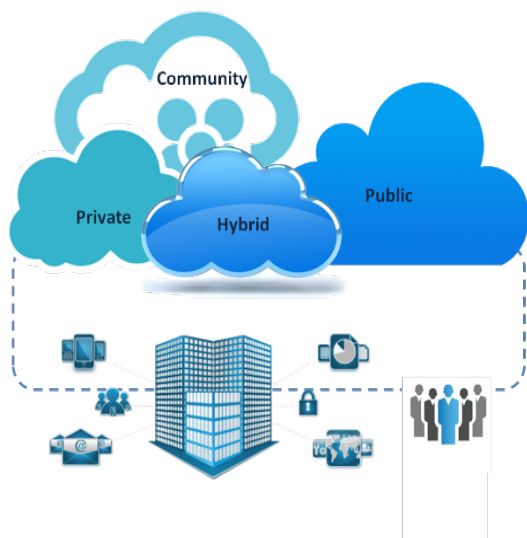
Public cloud: also known as external cloud. In public cloud, a service provider makes resources

such as applications and storage to the general public over the Internet. Public cloud services may be free or offered on a pay-per-usage (paying only for the services used by the client) model. It is easily scalable to meet customer requirements and is shared and accessible by all. Examples of public clouds include Amazon Elastic Compute Cloud (EC2), IBM's Blue Cloud, Sun Cloud, Google App Engine and Windows Azure services platform.

Private cloud: This cloud infrastructure operates specially for a single organization. It provides hosted services available exclusively to a limited number of people who are approved users affiliated with the organization behind a firewall. These services are hosted either internally or externally and are managed internally or by a third party and are delivered using a private network.

Community cloud: Here the infrastructure is shared among several organizations from a specific community with common concerns (like security, compliance, jurisdiction etc.) It is multitenant, managed internally or by a third party and hosted internally or externally on a private cloud.

Hybrid cloud: A hybrid cloud is a composition of two or more clouds such as public, private or community cloud. It offers advantages of multiple deployment models. In this cloud computing environment, an organization provides and manages some resources in house and has others provided externally.



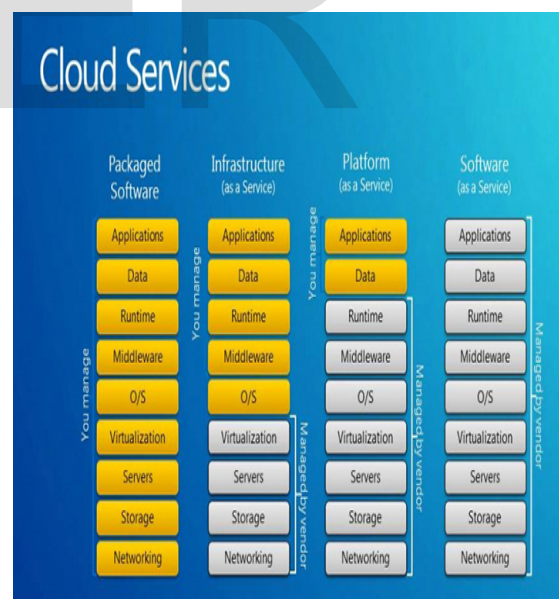
4. Cloud-Based Service Offerings Banks:

When we want to adopt this technology we have to choose whether we want to deploy it on our own premises or we have software which can be deployed as a service or a combination of both can also be deployed. This deployment model has a freedom of change as the service demand changes.

Infrastructure as a service (IaaS): Here the services provided to the clients are hardware belongings (like storage) and computing pre-eminence.

Software as a service (SaaS): Here the client does not need to buy the software packages instead of this the software applications as services are presented on the internet to the client for usage.

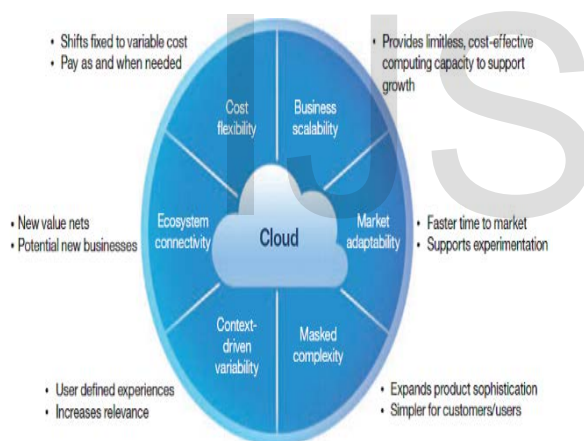
Platform as a service (PaaS): To sustain the whole significant growth lifecycle including drawing, debugging, testing, operation and support of the rich web based applications and services on the internet PaaS provides all the amenities.



5. Banking in the cloud:

The rapid emergence of cloud computing is transforming the way financial institutions think about how they consume their IT resources. Until now, technology has typically been a costly hurdle for financial institutions, particularly those in emerging markets where developing

customized solutions or investing in advanced banking platforms has either been unfeasible or the result has been too many failures, too many resources used and too much time wasted. Cloud computing, which in the most basic of terms offers unlimited computing resource as a service on a pay-per-use basis, is proven to directly translate to less upfront, capital expense and reduced IT overheads, offering a cost-effective, simple alternative to accessing enterprise-level IT without the associated costs. Cloud computing has the ability to make enterprise-level banking systems and associated technologies available in the cloud on a pay-per-use basis, now there is no barriers associated with this technology as anyone, anywhere can have access to banking systems without the cost and other. Cloud computing offers compelling advantages, when it comes to financial services companies, the most important benefit is quite clear: the ability to scale on demand without procuring intensive, expensive infrastructure.



6. Implementation of cloud computing technology under banking system:

As many banks' branches run under one central bank with same financial transactions, withdraw and deposit etc. even if with same transaction we run individual banking system. So there will be central cloud server where all the computing (s/w and h/w) resources will be there where each end user can communicate through API and perform the appropriate operation.

The T24 on Windows Azure offering is based on a software-as a-service model (SaaS). This model

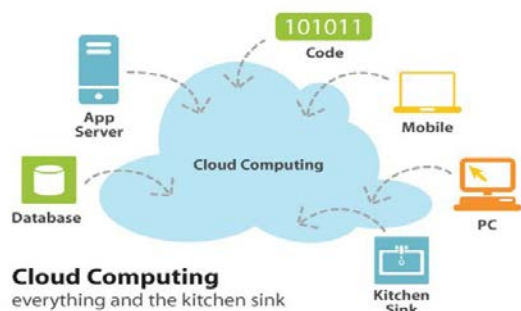
allows financial institutions of all sizes and locations to quickly take full advantage of the rich functionality of T24, without having to manage and invest upfront capital in a complex on premise deployment. And because T24 is offered as a pre-configured model bank, the solution can not only be rolled out quickly, but it requires very little customization.

6.1 Private cloud benefits the private cloud is the first step towards cloud computing, and it is here that the most critical applications of the enterprise will be hosted for quite some time.

The private cloud emerges stronger than the public cloud because it grants banks control over their IT while providing reduced complexity, increased flexibility, and all other benefits associated with cloud computing. Private clouds have emerged as the hot favorite of the banking industry also because in a financial environment where applications are critical and governed by stringent user industry compliance, they can provide high security. They ensure that no data is lost or misplaced and also provide the flexibility of control in order to modify resource configuration according to demand.

Private clouds allow more systems to operate at high transaction volumes without loading the network or slowing the process, ensuring better customer experience. Since resources are rented instead of purchased, it helps convert CAPEX to OPEX, reducing the total cost of ownership. Private clouds come with the advantages of affordability and safety and enable a transition in banking. To guarantee long-term success, banks need to properly understand the technology and develop new applications that would benefit the customer.

When an organization changes its infrastructure to a cloud configuration, it should be done in real-time to curb the wastage of unused resources. Technologies such as Cisco's Unified Computing Systems (UCS) help to monitor the server, storage, memory and network capacity. They can calculate, with reasonably high levels of accuracy, which servers require more resources and automatically prioritize them.



A well designed private cloud computing platform also costs less than a dedicated server on a per server basis. Cloud based collaboration technologies can also provide a platform for application development, cost reduction and help banks to reach out to their customers more effectively.

Beyond cost, they can create significant opportunities for banks to develop new business models that are customer centric, thereby increasing growth and profitability. There are six big benefits of the banking cloud:

I. Cut costs: cloud computing means banks will not have to invest heavily in dedicated hardware, software and related manpower. It is much easier for them to update their IT infrastructure and the cloud's modular, pay-on-demand model means they pay only for the hardware and software they need.

II. Improve flexibility and scalability: the cloud gives banks the ability to respond quickly to changing market, customer and technological needs. They can scale up and scale down technology according to requirement. The ability to respond quickly will be an important competitive edge.

III. Increase efficiency: banks will enjoy improved efficiency ratios and operating leverage. The standardization inherent in the cloud could makes it easier to integrate new technologies and applications in the future. Because technology and business operations can be much more closely aligned, the cloud gives banks a golden opportunity to drive out complexity.

IV. Serve clients faster: cloud computing makes new and bundled products and services easier to develop and launch, either on a stand-alone basis or in partnership. It eliminates procurement

delays for hardware and software. Banks will be able to boost computing power to meet demand peaks and provide the latest treasury solutions without needing to worry about whether the technology is up to date. Corporates will be able to access bank systems using web browsers from anywhere at anytime.

V. Forge stronger client relationships: The combination of big data and potentially unlimited computing power will allow banks to develop systems capable of providing better insight into clients and make better decisions on their behalf. Services could become more customized.

VI. Bring clients closer to their clients: transaction banking eases payments between buyers and sellers. At the moment the activities needed to process payments are inherently inefficient because they use different technology. But buyers and sellers could be brought together on shared applications in the cloud.



7. Advantages:

- ❖ **Cost Savings:-** If well designed, cloud solutions empower banks to meet customer demands and scale quickly, dynamic provisioning of computing resources, will save business users and IT experts from engineering the systems for peak loads.
- ❖ **Scalability:** If well designed, cloud solutions empower banks to meet customer demands and scale quickly, dynamic provisioning of computing resources, will save business users and

IT experts from engineering the systems for peak loads.

- ❖ **Time to market:** With cloud computing, time to market can be curtailed from months to weeks or days, depending on the size of a bank.
- ❖ **Data Virtualization:** Data virtualization is the assimilation of data from multiple and diverse sources across the enterprise or external sources for the on-demand consumption by a wide range of applications in a virtualized manner.
- ❖ **Mobility:** Many of today's corporate world techno savvy workers want to access risk and analytics reports while they are on the move.

They see the benefits of accessing the Internet on their smart phones and I pad's, instantly even in remote locations.

Likewise, they want similar interfaces for banking services-specific applications.



Feature advancements:

In the coming times, Financial Services firms will typically leverage Hybrid Cloud architecture to realize benefits (cost, speed, and efficiency) while balancing requirements (security, compliance, quality of service) across various business functions.

A hybrid cloud model enables banks to garner the benefits of cloud computing while also maintaining the security and confidentiality of their data.

Banks need to adopt practical approach to security and data privacy in the cloud. Most banks segment data with different levels of sensitivity, from low level (published widely with no restrictions) to ultra-secure (only accessible by top decision makers).

In the same way, banks will need to implement their cloud to have similar and appropriate security.

Banking services organizations are starting to adopt cloud computing technologies in a number of fields, in particular for mobile applications, innovation testing and micro banking.

7.1. The challenges of the banking cloud:

1. Security and compliance: maintain at all times the security of data. Banks need to demand stringent safety measures from suppliers and ensure new applications meet the latest and most rigorous security standards. Service Level Agreements (SLAs) are a must.

2. Reliability: ensure that applications and data are always available in the event of a natural disaster or an unpredictable event. Banks need to have stringent SLAs in place, complete with guarantees, end-game scenarios and remedies if a provider fails to meet service levels.

3. Cloud management: achieving visibility and measuring performance are harder to do, especially if, as seems likely, large banks will source cloud services from several providers and to use them for both internal – or private – and external, or public, services. This could result in a bank having to handle multiple security systems, and the need to ensure all parts of their business can communicate with each other and where necessary with clients. Increased use of various technology infrastructures and a mix of different cloud environments internally and externally mean banks will need to develop fully-fledged cloud management platforms. They will be a necessity to ensure banks can fully realize the

cost savings and flexibility benefits of cloud computing.

4. Interoperability: banks will need to ensure data and applications can be moved across cloud environments from a number of providers. They should look to develop a single interface and management layer that can work across different platforms internally and externally.

5. Regulation: the rules governing the cloud vary from country to country. Many countries' data protection laws impose constraints on where data is kept, limiting take-up. This is why the EC's move to regulate the cloud is welcome.

Conclusion:

Trust and security have prevented businesses from fully accepting cloud platforms. To protect clouds, providers must first secure virtualized datacenter resources, uphold user privacy, and preserve data integrity. Financial services organizations are starting to use cloud computing technologies in a number of areas, in particular for mobile applications, innovation testing and micro-banking. The banks need to know that this is all about 'business model transformation' and to achieve business agility for the next level of growth. The key is to ensure that each bank starts working on a cloud reference architecture, which will define its winning strategy.

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