CLOUD COMPUTING FOR INDIAN BANKS

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Abstract: The Banks Introduced in India to give better services to the people for the development of their agriculture sector and help for their small-scale business. The banking sector in India has witnessed a complete transformation both in its functioning and delivery of services to their customers. The banking services helps in developing economic factor that changed the profile of the village and the life of its resident. The banking plays a major role in the economic development of a country cannot be overlooked. The main goal is based on cloud computing to help banks. Today technology being the main driving force for business has made banking customers to sit back at home and run their accounts without walking into the banks for anything and everything. As the advancement of technology has taken place with immense use of internet, mobile phones and online bill payments banking sector in India has a new facet altogether. The cloud computing is one of the developing technologies which is being use by all industrial domain in the IT field. In this paper, I proposed the concept of using cloud computing to develop a banking system for Indian banks.

Index Terms **– Cloud computing, banking services.**

I. INTRODUCTION

India has become a major center in the world market known for its ability in the it fields due to its intellectual prowess in this field. But, there is also a part of India which is very far away from technology and its advantage that is the rural population and need credit for agricultural activities which has the following problems related to banks.

The 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 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 cost.

II EXISTING SYSTEM

The existing system uses Client/server Application. Client/server is a program relationship in which the client requests a service or resource from the server. Ts is a distributed application environment that distributes tasks or workloads between the providers of a resource or service, called servers, and service requesters, called clients. The client establishes a connection to the server over a local area network or wide-area network, such as the Internet. A server machines is a host that is running one or more server programs which share their resources with clients. A server machine is a host that is running one or more server programs which share which share their resources with clients. A client does not share any of its resources, but requests a server for a data.

Clients therefore initiate communication sessions with servers which await incoming requests. An Automatic Teller Machine is essentially a client-server system.

The bank's central computer is the server, and maintains information about the accounts of all the customers. The ATM is the client. When you check your bank account from your computer forwards

A request to a server program at the bank. That program may in turn forward a request to its own client program, which then sends a request to a database server at another bank computer.

Once your account balance had been retrieved from the database, it is returned back to the bank data client which in turn serves it back to the client in your personal computer displays the information to you. The server must handle three commands.

Withdrawal: Subtract an amount from the account

Query: Return the account balance to the client be a simple iterative server that is it handles only one connected client at a time.

The client must connect to the server when it is started allow the user to perform any of these functions and consequently disconnect from the server

III PROPOSED SYSTEM

The cloud plays a key role in the bank's efforts to transform its business and operating model. From a technical viewpoint, the cloud automatically assembles, integrates and configures technology resources to meet business goals. In business terms, it eliminates the need for a physical infrastructure to be present at each location from where the bank operates, thus making it easier for the bank to deploy services rapidly and at a lesser cost.

Banks are offering Internet banking and moving the payment function to the cloud, simply because of the great promise of cost savings, efficiency and reliability. By moving the payment function to cloud, banks can fend off the threat of disintermediation from Telco's and other mobile payment services providers. Payments are a huge source of revenue for the banks and banks will not let it go off the easily. Moving payments to the cloud not only eases the pressures on the bank from the point of view of managing an entirely IT setup for this but also benefit their customers.

IV CHALLENGES OF CLOUD BANKING

The main five challenges are given below,

4.1. Security and Privacy:

This is the primary concern in adoption of cloud computing
Among Indian banks. Most of the security and privacy risks can be mitigated by implementation of standards and best practise of security such as ISO 27001, ISO 27017 and 27018, PCI and PA-DSS, CSA STAR, the CSPs physical region for storing data and virtual servers to mitigate data sovereignty risks. Bank should also retain control and ownership of their data and implement required access controls, policies and procedures to meet their internal IS requirements.

4.2. Interoperability and Portability:

Banks should have the ability to migrate from one cloud provider to another CSP. This would Reduce the risk of vendor lock-in and provide flexibility for switching applications and data from one CSP to other. This would also provide flexibility of having some of the workloads inside Bank's premises.

4.3. Reliability and Availability:

While the natural capability of cloud is to have near 100% reliability and availability, there have been cases of power failure and other acts of God that shutdown the services. Banks should evaluate the SLAs for durability and availability, validate the redundancy levels of CSP compared to RTO and RPO requirements before selecting a CSP.

4.4. Regulatory Compliance

Banks should consider that the CSP is accredited with valid certifications like ISO 27001, ISO 27017, ISO 27018, SOC1,
SOC2, SOC3 etc..., to address the regulatory requirements. CSPs offering services in India should also adhere to RBI recommendations on cloud that includes physical isolation and data residency within Indian borders, albeit for all customer and banking transaction data only. Also, bank can consider PCI-DSS and PA-DSS certification for workloads handling card information and other PII, etc., for payments processing. It is also important for banks to consider the boundary of responsibility for security and clearly understand their responsibilities for all infrastructure outside the VM and banks are responsible for application and software inside the VM.

4.5. Performance

Bank should evaluate performance from network, application and data retrieval aspects. Network is a key component to access resources in public cloud. A bank should consider this aspect while deploying application in cloud. For critical workloads, banks should look at encrypting the traffic over the network between on-premises datacenter and CSP location unlike in a LAN/on-premises environment, banks would be charged additional or data downloaded and/or uploaded. A detailed evaluation of application data flow (end-to-end) may be required to identify the right candidate for cloud-based deployment to ensure the desired performance.

V CLOUD COMPUTING MODELS

Cloud services models offer financial institutions the option to move from a capital-intensive approach to a more flexible business model the lowers operational costs. The key to success lies in selecting the right cloud service model to match business needs. In this section we review various models for cloud computing services, operations and deployment.

5.1. Cloud Service Models:

Business Process as a service (**BPaaS).** The cloud is used for standard business processes such as billing, payroll, or human resources. BPaaS combines all the other service models with process expertise.

Software as a Service **(SaaS).** A Cloud service provider houses the business software and related data, and users access the software and data via their web browser. Types of software that can be delivered this way include accounting, customer relationship management, enterprise resource planning, invoicing, human resource management, and service desk management.

Platform as a Service **(PaaS).** A cloud service provider offers a complete platform for application, interface, and database development, storage, and testing. This allows businesses to streamline the development, maintenance and support of custom applications, lowering IT costs and minimizing the need for hardware, software and hosting environments.

Infrastructure as a Service **(IaaS).** Rather than purchasing servers, software, data center space or network equipment, this cloud model allows businesses to buy those resources as a fully outsourced service.

5.2. Cloud Deployment Models

These are three ways service providers most commonly deploy clouds:

5.2.1 Private clouds. The cloud infrastructure is operated solely for a specific company. It may be managed by the company or a third party and may exist on or off the premises. This is the most secure of all cloud options.

5.2.2 Public clouds. The cloud infrastructure is made available to the general public or a large industry group and is owned by an organization that sells cloud services.

5.2.3 Hybrid clouds. The cloud infrastructure is composed of two or more clouds that remain unique entities but are linked in order to provide services.

5.3. Cloud Operating Models

The third aspect of choosing the right cloud services delivery model is determining the appropriate operating model for the required mix of resources and assets. We have identified three operating models for cloud services.

VI BENEFITS OF CLOUD BANKING

6.1. No expensive hardware
High costs of running in house data centers removed
6.2. The right price
Consumption based pricing model offers operational agility when you need it.
6.3. Scalability
Resources can be scaled effectively and volume can be increased according to customer demand.
6.4. Fast and Flexible
Banks can become faster and more agile in creating new offerings. They don't have to worry about finding additional computing power
6.5. Viable
Sustainable financial services now a reality for emerging markets.

VII CONCLUSION

In future, Cloud technologies along with analytics, mobile technologies and big data will enable banks to unlock value from existing data and process to address risk management and drive customer engagement. By advantage on standard development processes, scalability and collaboration enabled by the cloud, the banks will be able to create new and innovative product and service offerings for their customers. The cloud architecture also offers flexibility in deployment models, thereby; enabling banks to become more agile and respond to market changes must faster and transform their businesses. As far as security in the cloud is concerned, in many cases, the security mechanism put in place by global cloud providers may actually be stronger than those in many bank's internal systems. The future of banking in the cloud holds great promise. Already banks in emerging markets are using the cloud to reach the unbanked population by offering mobile and electronic banking services. No doubt, possibilities of expansion using the cloud are endless for banks in the upcoming years.

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