AN ANALYSIS ON CLOUD PARADIGM IN ONLINE BANKING

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ABSTRACT

The arrival of cloud paradigm has forwarded its path to view the Information Technology requirements are fulfilled. Cloud paradigm technology has looked by the banking sector officials on their priority. So, they can get the maximum benefit from cloud environment. Various banks are now using cloud environment for the different types of banking requirements especially for online purpose. Cloud environment provides technical environment for their business paradigms for supporting better customer satisfactions, better association, and better delivery performance in competitive world and improved Information Technology effectiveness. To get the maximum benefit from cloud environment, online banking sector can produce a stretchy and responsive online banking system that can be rapidly react to the latest commerce requirements and other needs. This research paper provides a useful analysis in online banking using cloud environment. So that, banking business and diverse business paradigms connected with banking sector and the major troubles seen by the banking sector in implementing this advance technology in their existing business.

Keywords: Online Banking, Cloud Paradigm, Security, Scalability, Cloud Environment.

1. INTRODUCTION

Cloud paradigm nowadays forwarded every upright in the business world across every area. Companies are talking modern cloud applications to maintain their day by day industry oriented operations and applications [1]. For achieving this type of expansion and modernization in online banking, it is more and more essential to considerably fight with the opposition by using latest technology and industry representation for the better conversion. The striking revolution captivating position in online banking requires fresh directions to take full advantage of productivity and increased income. Cloud environment delivers secure and scalable paradigm that could help banks to build up new customer base and to get better customer satisfaction, facilitate useful association and get better pace to market [2]. The main goal of using cloud environment is to rising the Information Technology effectiveness and efficiency. Online banking takes the benefit of cloud environment to get enhanced mechanisms to take action in financial worries, organized worldwide economic systems and more and more service looking customers [3].

They can be use information to improve customer base or segmentation methods and to design and develop more alert services those are associated with banking customer requirements. Banking sector can maximize their ways of investments and distinguish them during customer service for achieving excellence. Apparent cost investments, relieve of rising in and rising out, earlier time to get market for implementing systems, virtualization of business broad banking data as a service, business technology regularity, and the capability to get data and applications on the shift are all significant thought factors that can drive business services firms to adopt cloud environment [4]. There are innumerable opportunities for business services providers to influence the reimbursement of cloud environment by transferring a diversity of applications to the cloud environment. In banking noncore services and applications and human resources processes as staff recruiting, customer billing and employees extensive travel related activities and management can be and should be simply transfer to the cloud environment. A lots of main and important operations, like data center based management in banks, data storage based as well as disaster recovery based, could be transfer to a cloud environment following a careful assessment of different types of vendors those offerings and located on the elasticity of cloud environment based vendors in maintaining the contract based services [5]. Due to its stretched processing power as well as ability, a cloud environment can accumulate information for different user preferences, so it can allow product based or service based customization. The background determined unpredictability of provided getting cloud environment finds it likely for online banking to customize customer connections and get a feel for to fine changes, which will be useful to get more user-specific experience [6].

The paper is organized in the following manner. Section 1 presents introductory view of cloud environment in banking industry. Section 2 gives the overview and different types of characteristics of cloud environment in banking industry. Section 3 tells about different types of paradigms of cloud environment. Section 4 focuses on benefits and challenges for using cloud environment based technologies in banking industry. Finally Section 5 presents conclusions of this paper. Section 6 tells about its future application and its advancement.

II OVERVIEW

Banking can include diverse factors for shifting to the cloud based environment, but the key factor is for running their applications and operations [8]. An essential faltering chunk for massive financial investments in cloud bases technologies and infrastructures has forever been the huge capital spending required for advancing their infrastructure as well as resources. With the use of cloud environment, most of the financial organizations only need to allot finance for banking industry based functional operating expense and remuneration for different types of services used by them. This expands it easy and additional cost effective solutions in the way to get the facility to test and deploy new applications in the cloud environment as compare to existing usual environment. No cloud environment based services is expected to gather all the services and technology necessities for all financial industry. Banking industry should have to build up and protect an application and services based collections i.e., includes both cloud and others applications as per the requirement. While establishment in old operations and systems are thought to be continuing but cloud environment based operations and services are perfect for fresh

business activities. Cloud environment based operations and services are likely to offer the frame of dual nature i.e., minimum money investments in implementing business paradigm and quicker means for turnaround time in the payment of product and different types of services [9].

III PARADIGMS

A cloud environment based service paradigm provides financial industry, the choice to shift from a profit oriented means to an additional flexible business paradigm that reduces operating cost. The important aspect is to achieve in selecting the accurate cloud environment services paradigm to gather business requirements. This section focused on the review work, which presents a range of paradigms for cloud environment services, methods, operating functions, security architecture and the way cloud environment implemented.

3.1 Cloud Environment Based Service Paradigms

Service	Description
Business Process-as-a-Service (BPaaS) [10]	The cloud environment is used in implementing for regular business processes and services such as customer billing, organization payroll management, or human resources management. BPaaS includes all the additional service models with process expertise.
Software-as-a-Service (SaaS) [7]	A cloud environment service provider is involved in the management of the business software and related data and users access the services and data via their web browser or apps in online manner. Number of software that can be delivered this way include accounting , Customer Relegation Management , Enterprise Resources Planning, invoicing management, human resource management related activities, content management, and service desk management.
Platform-as-a-Service (PaaS) [11]	A cloud environment service provider offers a complete platform for application, interface, and database development, storage, security, and testing. This allows businesses to streamline the development, maintenance and support of custom applications, lowering Information Technology costs and minimizing the need for hardware, software, and hosting environments.
Infrastructure-as-a-Service (IaaS) [12]	This cloud environment paradigm allows businesses to buy those resources as a fully outsourced service rather than purchasing servers, software, data center space or network equipment.

Table 1: Cloud Environment Based Service Paradigms

3.2 Cloud Environment Implementation and Deployment Paradigms

Cloud Environment can be implemented and deployed in the 3 ways by the service providers and these 3 ways are given as follows i.e., Private cloud environment, Public cloud environment and Hybrid cloud environment. The details of all three types of paradigm are given in the Table 2.

Types of cloud	Description
Public clouds	The cloud infrastructure is made attainable to the common public or a large industry group and is governed by an organization that trades cloud services.
Private clouds	The cloud infrastructure is operated uniquely for a specific organization. It may be governed by the company or a third party and may prevail inside or outside the premises. This is the most impregnable of all cloud choice.
Hybrid clouds	The cloud infrastructure is consist of two or more clouds (private or public) that remain sole entities but are associated in order to administer services.

Table 2: Cloud Environment Implementation and Deployment Paradigms

3.3 Cloud Environment Based Operating Paradigms

The third and important feature of selecting the accurate cloud environment based services delivery paradigm is shaping the suitable operating paradigm for the necessary combination of resources and organizations assets. The three important operating paradigms for cloud environment based services are given in Table 3.

Features	Description
Staff Augmentation	Financial organizations can gain cloud environment based capability by hiring staff with the accurate ability from different service vendors. The added people can be housed in the organization's existing offshore development center. This operating paradigm allows for flexibility and lets organizations select the right resource for each precise requirement.
Outsourcing Vendors	This approach uses offshore centers, facilities, and staff from a third party vendor to handle cloud environment based operations. The paradigm integrates resources and investments to provide to cloud environment based services for multiple banks.
Virtual Captives	This approach has a dedicated pool of resources or centers to help with cloud environment based operations and meet demand. This operating paradigm is a good choice to a complete outsourcing approach.

Table 3: Cloud Environment Based Operating Paradigms

IV ADVANTAGES & CHALLENGES

4.1 Advantages

The banking industry especially online banking talking the advantages of cloud environment based services to enhance their customer base and delivery process. In this section we are elaborating the advantages of selecting the cloud environment based paradigm in the banking sector.

Advantage	Description
Cost Savings	Business sharpness is determined by the cost an organization incurs. There are a few self service based, and perceptually cost effective public cloud environment based solutions. Low cost price campaign advertised by public cloud environment vendors have inspired Information Technology departments to put on an insight into costs, resource allocation paradigm and the variety of cloud paradigm, including public cloud environment, private cloud environment and hybrid cloud environment.
Mobility	Many of today's business world technology confidence employees want to access risk and analytics reports while they are on the move. They see the profit of accessing the internet on their smart phones and hand held devices, instantly even in remote locations.
Scalability	Cloud environment based solutions empower banks to meet customer demands and scale quickly, dynamic provisioning of operating resources, will save business users and Information Technology experts from engineering the systems for peak loads. Banking sector can undertake the challenges of security and data privacy by devising a hybrid cloud environment where precise data can reside on a private cloud environment and computing resources and power can be available on a public cloud environment.
Data Virtualization	Data virtualization is the assimilation of data from multiple and diverse sources across the organization or external sources for the on-demand consumption by a wide range of applications in a virtualized manner. Many mandates in context with the regulations and performance of banking sector require a data virtualization strategy.
Time to market	Using cloud environment based services; time to market can be curtailed from months to weeks or days, depending on the size of a bank. A self-service based on-demand and on-time monitored cloud environment helps by: •Phasing out procurement delays for hardware and software. •Accelerating computing power for when current applications need to deal with peak loads.

Table 4: Advantages

4.2 Challenges

The Cloud environment based technologies acceptance continues to expand impetus across a wide range of banking related operations and services. Rather than the encouraging turn about cloud environment technologies, a consistent, trusted, usual of cloud environment that will facilitate quicker rates and advanced levels of acceptance is right now a extensive mode off, with fairly inadequate growth being finished in with the purpose of consider in the earlier period. When bank and its services migrated into cloud environment, there exist two major challenges that should be considered i.e., Security: The confidentiality as well as security of business and personal information based data as well as critical applications are paramount. Banking sector cannot accept the chance of an operational security break. Despite financial damage for bank to slash down charges and enthusiastic assurance from cloud environment technology organizations, security considered a prime target to cloud environment technology implementation approval. Finally, for cloud environment to get complete acceptance within the bank, cloud environment services have to be undamagingly combined into present security operations, platforms as well as processes. Regulatory needs and compliance: Banking customers are essentially liable for the security as well as integrity of its personal data, even though it is administrated by a third party service provider. Although these service providers in the banking sector are under the external audits as well as security certifications. Cloud environment based service provider those ignores to go for this type of assessment are guiding that banks customers can merely use these services for the most shallow work and activities. Most of the banking mangers need that financial and personal data for bank's customers reside in their own country and legal boundary. Definite observance arrangements need that banking data need not to require to be mix with additional banking data i.e., shared servers or others databases. So bank should aware regarding the types of data resides in the cloud environment. The challenges related to Security issues that should be aware to the clients are given in the following Table 5.

Privileged user based access	Recovery	Regulatory based agreement
Investigative based support	Data location	Long-term based viability
Operational Security	Data segregation	Scalability

Table 5: Challenges

V CONCLUSION

Sustained progress of cloud environment in the online banking area will involve vendors and banking industry to beat its problems mutually. When deciding about cloud environment implementation in the organization, bank industry must decide to select better service and delivery criteria that best match with the necessities for operational security as well as scalability, better flexibility, reduced operating cost, and pay only for peruse criteria. Banks should take up a moving ahead based criteria towards cloud based facility and services, investigate each and every project based on the following criteria i.e., types of banking applications and used criteria for data. Some projects based on lower risk i.e., customer relationship management (CRM) and enterprise based content management for better internal and external satisfaction. The projects contain high risk will engage core banking business

functionality model such as management of wealth for the customers. In long run banks will adopt integrate strategy for getting the maximum use of different types of cloud i.e., private, public and hybrid paradigm and it will increased the usability of simultaneous using the different types of clouds according to the use. Private and exclusive accessing of clouds are likely to more and more become the consumption paradigms for accessing the cloud environment services in online banking, providing banking sector complete power based on their ownership and running operations of banking cloud environment.

VI FUTURE APPLICATION

In the future, financial organizations will naturally force Hybrid Cloud environment to get profit in terms of cost, computing speed and improved efficiency. In terms of complementary requirements i.e., the security features, delivery fulfillment, more quality oriented services into a range of business activities. Hybrid based cloud environment provides banking sector to gain the maximum profit of cloud environment while focusing the operational security as well as data confidentiality in the banks. Online banking needs to accept realistic method to provide security as well as data isolation in cloud environment. The majority of banks divide the different types of data according to the usability as well as sensitivity. It means that lower level data i.e., available mostly without any limitations as compare to highly secure data i.e., accessed by only top level management. The same manner, online banking will require to execute its cloud facility to get alike and suitable security policy. Banking industry started to take on cloud environment facility in different types of applications i.e., handheld devices based apps, advance level testing and micro as well as small banking applications.

Online banking - Recently banks are providing apps for accessing banking services through online manner from different handheld devices. These services are balance update; place new cheque book request or make stop payment requests. Cloud environment is also providing research and development facility to the banks to test new services before launching any new apps for the customers. Some small banks are looking forward for transferring their entire banking business on cloud based environment.

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