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CLOUD BASED FRAMEWORK FOR E-BUSINESS PROCESSING

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Abstract

E-Business follows all its business day today activities through internet. E-Business systems provide both business information like product prices and quantities and perform other business actions like buying, selling and negotiation.Cloud computing technique in the field of information technology is a booming area, which supports e-business. It is significant to value the integration between these two. This paper focuses on this and the supportive framework for the cloud for e-business management is focused for current trends. The different layers of cloud architecture for e-business are specified. For any technology, there may be some challenges for implementing it. These challenges are also addressed.

Keywords*: Cloud Computing, Cloud Framework, E-Business*

Introduction

E-Business is an accepted and growing Web application which enables associates, customers and workforce to achieve a Varity of purpose and services. A general definition of e-business, is "E-Business (electronic business) is to carry out of business processes with buying and selling products, supplies and services, servicing customers, payment processing, production control management, collaborating with business partners, running automated employee services, sharing information, recruiting and more". IBM in the year 1997 October first used this term. According to the nature of the transactions, the following types of e-business are distinguished: Business-to-Business (B2B), Business-to-Consumer (B2C), Consumer-to-Consumer (C2C), Consumer-to-Business(C2B),Business-to-Government (B2G), Government-to Business (G2B).

The increasing use of information technology in this area has led to fundamental changes. The business activities such as the rise of dynamic pricing, theability to easily compare many goods and ability to negotiate contracts much more frequentlyareadopted the more advanced information processing techniques for the further changes(Chang, V., et al,2010).There are Some problems which related with e-business models such as, platform security, regulatory, technical standards and other services are not well determinedso far in perform, However

with the advent ofcloud computing many of these problems can be solved.Cloud computing has been one of the most booming technology among the professional of computing environment and also the trade industry due to its elasticity in the space occupation and also the better support for the software and the infrastructure. It attracts more technology specialist towards it. Cloud plays the vital role in the smart economy,and the possible regulatory changes required in implementing better applications by using the potential of cloud computing(Bcigalupo, D; Wills, G; De Rouse D,2010) Cloud computing can be defined as

"A style of computing where massively scalable information technology related capabilities are provided as a service across the internetto multiple external customers" (Felicianand, Marius, 2010)

It is an evolution from distributed computing system, consisting of collection of inters-connected and virtualized computers that provide services dynamically as one or more unified computing resources based on Service Level Agreements (SLA).The cloud computing technology that it gives the low cost implementation for infrastructure as hardware, Software and license insome higher business units like Google and Microsoft which offer the cloud for free of cost for the education systems and business application.The cloud computing asanew service model, with network storage, on-demand access to nature,provides a new information resource sharing andprocessing mechanisms. In the existing conditions, cloud computing framework allows enterprises with less investment to e-business business applications(B2B & B2C). Currently,the combination of e-business and cloud computing research focuses on the technical level, therefore, cloud computing based e-business application framework will have a high practical value(XiaofengWang,2012 and Tairan Liu.,2011).

Many business companiesdo not have the resources and infrastructure needed to run top e-business solution. Usually, e-business systems are developed as distributed applications. The architecture of a distributed e-business system includes software components, like the client application, an application server and database serverand the necessary hardware components as client computer, communication infrastructure andservers (Zhang Jie.,2010 and Jiangyu Sun,2012).

Literature Study

Cloud computing for E-Business had drawn a significant amount of attention for many researchers for the recent years (Juncai et al.2011) provided various cloud computing E-Commerce models and security challenges related to the sensitive information. Different cloud computing e-business models and security challenges in network were also addressed. The opportunities based on cloud security for IT persons like data theft, damage and leakage

were considered (Wang,2012)proposed a system to improve the e-commerce in the cloud computing environment. He constructed of new model forthe problemexploration. He alsoparsedrelated issues on e-commerce development model based on cloud computing.(Liu,2011) introduced the e-commerce application model based on cloud computing and camewith the problem of e-commerce and the downtime of resources by establishing the framework of e-commerce application based on the environment of cloud computingservice model. (Jie,2010) tried to solve the problem of the transaction security in C2C E-commerce. Heanticipated an assessment model based on cloud model theory. By means of using the algorithm of the merger of the trust cloud and the similarity computing of the trust cloud, sub-attribute valuation and comprehensive valuation isachieved. The two side of transaction got strategic advices. Experiments showedthat the method of valuation model waspractical and valid. This model wasnot only applied to C2C E-commerce, but also a valuable method wasprovided for trust valuation in opened network. Sun and (Yuan,2012)developed an Online Selling Syndicates system with Spring framework and several Apache open source projects for this market based on Software as a service(SaaS) model and analysis of customers' requirements, multi-channel and multi-tenant are supported by the system. For convert IT resource to business concept, a controller cluster mode wasdesigned to decentralize the statue control of cloud computing. Two fast check algorithms were designed to serve the efficient control (Juncai and Shao2011) showed that the application of cloud technology in the business field. Theyintroducedthe development trend of cloud computing to solve a great.

The Cloud Evolution:

The client hardware could be a mobile device or a desktop computer. The client application can be a simple web browser or a dedicated application. The e-business server will use cloud computing, so all the required resources will be adjusted as needed (Shen Juncai and Qian Shao,2011)

CLOUD ERA	1990-1995	2000-2010	2010-2020
	E-Business	IT as a service	Everything as a service

Why (forcing function)	Internet based supply chain integration and e-business	Consumerized internet services Low cost IT	Pervasive business and consumer services
What (technology orientation)	Web based app design EAI and message bus integration Internet protocols 3-tier architecture	Web 2.0 and SOA app design Virtualization Cloud based technology platforms	Data oriented, context aware services Vertical and horizontal eco systems
How (IT organization design)	Organized around technology domains Technology-centric	Organized around service supply chain Service-centric	Organized around value networks Service – Centric

Table 1: Emerging Cloud Era and its impact on e-business

Cloud computing is widely accepted today due to its main advantages (Shen Juncai and Qian Shao,2011):

1. The cost is low. Also there are no costs or very small for hardware upgrades;
2. Flexibility: It allows dynamic scalability as demands fluctuate.
3. Accessibility: It makes data and services publicly available without vulnerable sensitive problem.
4. Devices with minimal hardware requirements asmobiles canalso be used as cloud clients.
5. To become part of the cloud, no need to download or install precise software, the only requirement is internet connection.
6. Crash recovery is nearly unnecessarybecause everything is stored into the cloud.

There are some cons of the cloud computing (XiaofengWang,2012):

1. Theoverall performance may be affected by the internet connection speed.
2. On a long term basis, the data center subscription fee may be more expensive than buying the hardware.
3. The service quality is crucial and the need of the backups is critical when speaking about data security.

The cloud computing provides some major security benefits for individuals and companies that are using/developing e-business solutions, like the following:

- ✓ Improved improbability.
- ✓ Virtualization

- ✓ Centralized data storage.
- ✓ Monitoring of data access.

E-Business Framework based on Cloud Computing:

The proposed cloud based e-business framework is mainly divided into five layers: (1) Hardware resource layer (2)Software resource layer (3) Resource management layer (4) Server layer and(5) Business layer.

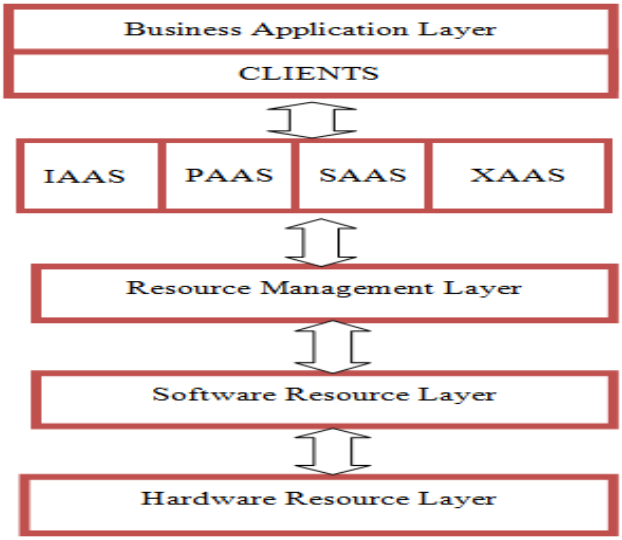

Fig: E-Business Cloud Framework

Hardware Resource Layer:

This important and bottom most layer is to improve resource utilization, the physical hardware layer is virtualized. It establishesthat resources in a data centerare competently managed and can be procured, expanded, and constructedquickly. Physical servers, network and storage are grouped through virtualization andcalled it as upper software platform. To offer the uninterruptible power to the cloud middleware servers for the cloud based e-business systems, physical host pool is expanded dynamically and memory is scalable at any time.

Software Resource Layer:

This layer is created to interconnect theoperating systems and middleware technology. Manyof these software solutions combine to offer the grouped interface for the software developers. Therefore, software developers can create many applications for e-business system and able to embed those in cloud.

Resource Management layer:

This layer plays anvital role in supervising the last two layers. It get loose coupling of software and hardware resources. With the help of virtualization and scheduling idea of cloud computing, it brings the uninterrupted on demand software distribution for different hardware resources.

Service Layer:

This layer is divided into four sub-levels namely IAAS, PAAS, SAAS and XAAS. These service layers help to cloud customers to use the various forms of cloud resources for their products like software resource, hardware resource,and Infrastructure resource.

Infrastructure as a service (Iaas)of e-business cloud:

This layer is the base layer of e-business cloud shares IT infrastructure resources and connects the huge system pool together to provide services. Cloud computing allows the hardware layer to run more like the internet, to make the hardware resources shared and accessed as data resources in secure and scalable way. Virtualization technology separates the physical hardware from operating system. The base layer can provide the basic hardware resources for the platform layer, and the users can also make use of it as the same as using a local device to use.

The platform asa service(PaaS) of e-business cloud:

With the support of the powerful hardware, platform layer carries out the tasks of data storage, computing and software development. It can even achieve the tasks of completion of the original mass data storage, business intelligence processing and so on which have been difficult to complete. Users can choose the devices and the number of devices according to the complexity of dealing with the content. Virtualization technology enables the platform to show a strong level of flexibility.Businessapplication

Softwareas a service (SaaS) of e-business cloud:

The services provided by a professional company e-business, the companies to pay in the similar way of on-demand access, according to the amount to calculate the cost, complete the production, marketing, trading and management. Companies use e-business system in lower cost to avoid wasting, and more resources can be used for business activities.E-business cloud environment provides user-oriented ubiquitous adaptive hardware resources, computing environment and software services. Users can access digital services transparently at any time anywhere. The information space and physical space will be integrated.

Anything as a service (XaaS) of e-business cloud:

The growing diversity of services provided globally. It is also called everything as a service reflects the vast potential on-demand cloud services by companies like VMware and HP. The term 'X' in XaaS for everything such as Software as a service (SaaS) to Storage as a service, Desktop as a service(DaaS) to disaster recovery as a service, Network as a service(NaaS), Infrastructure as a service(IaaS) and Platform as a service(PaaS) and the other emerging services as Marketing as a service(MaaS) and Healthcare as a service(HaaS), etc.

Business application Layer

Business application layer differs from all other layers, because this layer acts as important business logic of e-business, and frames the expansion of group of components for e-business. There are growing number of SAAS services which could provide different aspectsto leverage cloud platform to run and manage business processes such as : sales tracking management,goods creation and evaluation , Customer Relationship management (CRM), Self Serves Customer Portal, Supply Chain Management (SCM),Finance and Cost Accounting, Enterprise Resource Management(ERP),Human resource Management (HRM) Etc.Thus, cloud results helps us from having to purchase, maintain and train IT staff on expensive hardware and proprietary software code. With One Network's technology solutions in the cloud, we no longer have to purchase, maintain, update and replace expensive equipment. The cloud solution also enables us to provide industry-leading time-to-value, with implementation times averaging less than half the time of traditional supply chain solutions. In addition, real-time data across all of your value chain participants means increased revenue opportunities.So,say goodbye to costly equipment, maintenance and proprietary programming languages. And get acquainted with instant data flow across your entire value network. Connect to your entire value network in the cloud and see how easy it is to lower your costs and increase your profits.

The importance of integrating Cloud Computing& E-Business:

The Cloud impacts the E-business in the following aspects. Cloud-based e-business applications allow companies to respond quickly to market opportunities and challenges – as long as they engage IT. Cloud-based e-business applications enable IT and business leaders to evaluate new opportunities without large upfront investments. Consumerization of the online customer experience requires closer scrutiny of solution offerings. IT leaders must understand the pros and cons of cloud-based ownership models in order to select the right solution for their needs.

There are a set of factor which related with the progress of EC development, it needs are changing into its constraints because of the limitation of enterprise size , economic strength, and technical force, which is mainly showed in following aspects(S. Dan,2010 and Tairon Liu,2012):

1. Technical problems such as mass data storage,data mining,Information security.. etc., become a tough set, especially for small and medium-sized e-commercial businesses.

2. Growing equipment &operation cost are bound to make troubles in the development of e-business system.

3. Limitation of information processing capacity and safety performance is imperfect,all of which impede the development of e-business.

Nevertheless, with the emergence of cloud computing and the progress of technology it is provides for e-business good opportunity to develop, which can be showed as follows:

1. E-Business based on cloud computing (e-business cloud) environment provide large scale of data center in which mass data storage, high-speed computation, and data mining capacity and significant cost advantage to develop e-business business.

2. In e-business cloud model, data storage is highly distributed, data management is highly centralized and data service is highly virtualization, all of which offer a much secure data service.

3. Becausethe e-business cloud environment reducesthe demand of access to the terminal, the problems of information processing,transmitting and security can be solved neatly.

4. Operation and management based on cloud computing. E-business business can process data flexibility,minimize the operation cost, and realize the automation of solutions in application without considering the position of equipment resources [12].

5. Supply Chain Management (SCM) based on the cloud computing. Cloudcomputing offers secure and reliable, service of data storage and calculation in time whenever clients need.

Major problems of E-Business Cloud:

Cloud computing is a new practice mode applied to e-business. The integration of cloud computing and e-business has not yet reached a mature stage and still needs the test of practice. At present, there are still many problems that need to be solved.

Security Issues of Cloud Computing Platforms:

Cloud security includes the data security and the confidentiality of privacy. Currently, all types of cloud computing, i.e., private cloud, public cloud, mixed clouds,and other concepts,have been proposed and gradually applied to practice, but whether they are effective remains to be further verified.

Challenges of Cloud Applications:

For some e-business companies, entrusting the work to the third party contains some elements of risks. These risks may be greater than the benefits for the business.Therefore, they will be worried to develop their system with connected to a third parity.

The Standards of Cloud Computing:

The cloud-based e-service model is still in a fragmented state. If the usersreally want to promote and apply these new models, a unified industry standard should be developed.

Regulatory Issues of Cloud Services:

There are many services which can be provided through the cloud computing platforms. Informationprocessing, data storage, security, maintenance and other work are usually dealwith by the cloud service providers in cloud computing environment. Then, the service provider's position will become crucial to properly handle the information that is related to the user's information security.

Conclusion

At present, the environmental cost during the enterprises appliesfor the e-business is in extreme need. Therefore,the cloud infrastructure solvesmost of the problems in the enterprise e-business application. Thisarticle providesan e-business framework based on cloud computing.On the other hand, e-business models are still in the developing stagesof investigation and application. Some problems such as technical standards,Analyzing networksecurity, regulatory and other services are not fully resolved in put into practice, in the course of further research and exploration. Anyhow, e-business application model based on cloud computing will not stop its swiftness to proceed. As the cloud computing technologies become more stylish and the applications of cloud computing become increasingly widespread, e-business will certainly lead in a new epoch of cloud computing.

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