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A Review on Application of Cloud Computing in M-Commerce

Beenazir Ganji
Department of Computer Science, Payam Noor University (PNU), P.O. Box 19395-369, Tehran, Iran

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Corresponding Author:
Beenazir Ganji
Department of Computer Science, Payam Noor University (PNU), P.O. Box 19395-3697, Tehran, Iran

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Abstract: Cloud computing is considered as an evolution over the past year due to its relatively new approach which promises improvement in scalability, flexibility, cost efficiency and changing enterprises which are dynamically scalable and their virtual machines which were provided as an internet service. There is an urgent need to find out the cloud usage, platform and providers. m-Commerce is a quantum leap of technology that has influence on the business and society. Users can access the internet directly regardless to their location. This Study explores a new model that connects cloud computing to m-Commerce. Two different technologies with similar architecture and features were presented to bridge the gap between these two. Moreover, some features that are similar between these two were mentioned, too.

INTRODUCTION

Nowadays, generally cloud organizations divided into two main groups: from large to medium size corporation that have a long history in data processing which uses IT for both tactical and strategic products. In most cases these organizations use private or hybrid clouds. On the other hand, medium-size and small companies may be motivated to use cloud computing. Using cloud computing provide many advantages for companies like fats identification for customers, changing product evaluation, on-time negotiation and fast product service. Companies especially will need especial services for develop, promote and advertising new products, marketing B2B, B2C, C2B and C2C and having capability of exploring the customers. Companies and enterprises try to use technologies which have several potential benefits like resource flexibility which cloud computing provide a good allocation to scale up their capacity. Moreover, the term “pay-as-you-go” pricing which helps companies to eliminate up-front expenses and provide variable costs for people can be considered by organizations, too. Even in IT, cloud computing may provide some necessary applications and concepts that associated with market opportunities and involves in many organizations.

BACKGROUND

Cloud and business: Cloud computing which provide reliable services delivered by especial data centers and storage virtualization technologies[1]. Cloud providers cannot use the traditional way of resource managing architecture and instead they use market-oriented resource management which can be a good way for market planning and providing a good incentive for both cloud consumers and providers[2]. According to Foster *et al*.[1] you can consider cloud as a business evolution of grid.

Platform which is used for installing applications and updating operating systems, database and web servers.

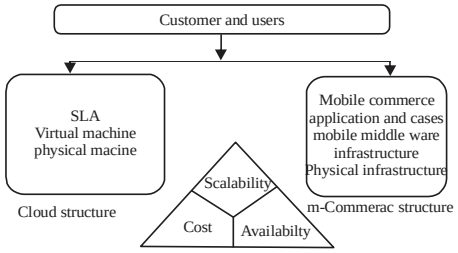

Fig. 1: Proposed model

Software which is performed through these applications and these applications are provided through medium of the internet like CRM (Customer Relationship Management) or resource management. In fact, they are not desktop applications and you can use them by web browser on any computer operating system[3].

M-Commerce and business: m-commerce that is a form of E-Commerce helps businesses to find their customer in different locations. M-Commerce applications are not limited to banking and brokerage, payment can be considered as another application. It's widely growth is related to some factors like increasing in remote workers, improving customer service and it's solution by productivity and competitive advantages like availability of inexpensive hardware, less expensive and faster wireless network.

Customers want to use internet services from their mobile phones to do their business everywhere. Many M-Commerce Devices (MCDs) which can make the use of M-Commerce easier are mobile phones, Personal Digital Assistants (PDA), portable computer networks, Bluetooth, WAP and other facilities which use wireless network[4]. Customer-oriented M-Commerce is undeniable and many enterprises take up the wireless web through different devices like AT and T, Sprint PCs, Verizon Wireless and other service provider[5]. Although, M-Commerce is the use of mobile devices to communicate through public and private network, no proper idea about it is existed. Due to its specific characteristic like information transmitters, being ubiquitous and mobility is called M-Commerce.

PROPOSED MODEL

Purpose: The goal of this study is to present a new structure that can construct a bridge between cloud computing which is considered as a comprehensive productivity tool for small business due to its especial features and m-Commerce which can be a complete replacement of electronic commerce because of its characteristics become a coup in forming a new business. Moreover, in this study, it is examined some similarities of cloud computing and M-commerce which are worth mentioning (Fig. 1).

A quick review on cloud structure

Users: Users or customers are whom order especial service according to their need to cloud providers[3]. User factors can be a key factor for making the adoption of cloud computing successful in enterprises. In other words, brokers submit their service request anywhere in the world to the data centers to be processes[5]. Corporate users ensure users, who are subscribers to purchase their own service, to deliver their service based on their promises and in many cases decreases stress and cost in order to keep system and using especial applications for organizations[6].

Service Level Agreement (SLA): Service Level Agreement (SLA) is considered as a user's requirement plays as an interface or contract between users and providers for assurance of delivering services based on agreed-upon. Some important measurements of his service are measurement of service delivery, method of showing performance and changes of it over time[4]. According to Troong[3] it is comprised of six mechanisms like service request examiner, admission control for pricing, accounting, virtual machine monitoring and dispatching.

Virtual Machine (VM): Virtual Machines or VMs can do their task on a single physical machine to meet service requests that were accepted, provided with maximum flexibility in order to allocate different segment of resources on the same physical machine. Moreover, they can run applications on different physical machines with different operating system environments and can be considered as an isolated part.

Physical machine: Generally a group of computing servers that provide resources based on needs and demands are called physical machines. Increasing energy use and better management of SLAs can be conceived by remapping physical machines[7].

Solutions for some concerns

Standardization: One of the justification of cloud computing as a utility computing is standardization. It is a key point in cloud to ensure the internal use between virtualization vendors. Users tend to move their data and applications from one provider to another, cloud computing infrastructures don't employ the standard method of storing user's data but by standardization they can be far from their concerns. Open cloud manifesto is an important step for providing the standardization and can bring flexibility of the system.

Automation: One of the key characteristic of having effective cloud computing is automation; it provides the means to build cloud service across virtual and physical

cloud platform. In many cases it provides some capabilities like adjusting the allocation of cloud resources, monitoring virtual machine and even monitoring security parts[8]. On the other hand, one of the most important issues in managing IT environments through VM ware infrastructure is Automation, it provides continuous communication and update of thousands employees in crisis and disaster.

Modulation: An important element in the definition of cloud system's architecture is modularity. The term modularization comes from modular, the production of modular able ICT to be adaptable based on customer's specific requirements[9]. Modularization able a new form of customization and it can help to reduce business efficiency for provider. Modularization help providers to accumulate all of the available resources based on relevant services[10].

Integration: One of the key important factor in cloud computing is integration. Integration is presumed as a cloud service. Cloud can easily integrate with other applications on the same platform[11]. Integration of enterprises applications with different data centers has been developed to be just one data center. Up to now data and applications of enterprises are connected by one or more standards-compliant integration platforms. Even B2B integration is done by especial data format, network and internet.

M-Commerce structure

Customers and users: Users are corporate or individuals that form the final recipient of mobile application and services[12, 13]. Users of mobile commerce are who can interact in real time anywhere, anytime without location limitation. Users can request for information in the internet and brokers who create mobile agent programmed with search patterns and service instructions. Using mobile phones has no limitation in their age and they can be young teenagers to elderly.

Mobile commerce applications and uses: Nowadays a new area of mobile technologies besides micro browsers and other mobile applications are invented, they suggest internet available for consumer use like banking, booking and buying tickets, shopping and even real-time news.

Wireless user infrastructure: By using wireless infrastructure, computing services become accessible on mobile devices[14]. From 2000, many countries invest on installation and use the wireless infrastructure in an effective way[15]. One example of peer-to-peer wireless network is MANET which transmit client node to another without preexisting network infrastructure, this kind of network is popular when information moves locally or individually to other nodes[16].

Physical infrastructure: Mobile commerce naturally is independent from location in comparison to electronic commerce. The purpose of this part is introducing physical machines that are used in M-Commerce. As it becomes obvious from the term M-Commerce (mobile commerce), the most important devices that is used are mobile phones. Talking about high-featured mobile phones, they have especial characteristic like low processing power and power consumption, average storage capacity, having wireless protocols like Bluetooth, QSM, CDMA, IrDA support, other cellular connectivity like GSM, GPRS/UMTs, Wi-Fi or WLAN connectivity and portability[17].

Similarities: Scalability is prime consideration of cloud that is provided by virtualization, in other words virtualized platforms improve the delivery of performance and scalability[18]. Scalability means an application can expand when new users added or changed. In terms of hardware, it means transferring from small to large amounts of processing power and in terms of software means to promote per unit of power as hardware sources increase. Both private and public cloud represents scalability and this term has a close bond to elasticity. For example, Amazon or more specific S3's design purpose is to provide scalability, availability and low cost, big Table was developed with high flexibility and scalability, too. Scalability in cloud provided specifically by reducing the need to keep session state.

By increasing the growth of wireless services many features like availability, scalability and cost efficiency is provided. Scalability means providers can serve a large number of customers with minimizing low performance[19].

Availability refers to the property of a system being accessible and usable upon demand by an authorized entity. System availability includes a system ability to carry on operations even when some authorities misbehave. In case of availability information and information processing, availability according to clients upon demand is one of the concerns. As application needs to ensure that enterprises in SaaS provide with service, the architectural changes to add scalability and high availability is needed. Availability and reliability are a kind of precondition for the partner cloud; and rescaling and coverage is important for the public cloud. These requirements will be not only guiding principles but also design criteria for enterprise clouds[17].

Availability also means accessing to any wireless service like M-Commerce from anywhere, anytime without paying attention to the location, network load or device type or having short, acceptable and predictable response time that can be as a measurement. Moreover, the term M-Commerce or mobile commerce make it clear that the services can be available anywhere.

Cost effectiveness means wireless services like availability and response time is done without enough cost in infrastructures[19]. Cost is a controversial issue in m-Commerce but more specific we can consider ad hoc m-commerce to decrease the cost of data transmission in a significant way for consumers[20]. On the other hand one of the facilities that presented by mobile phone is Bluetooth that its origin considered as a low-cost cable replacement on phone headset. In many cases mobile operators consider Wireless Application Service Provider (WASPs) in order to represents applications with low predictable cost[12].

In the same way according to the major purpose of cloud is reducing cost. In SaaS cloud, client only focus on the use of software instead of worrying about the cost of software license and software updates. Even in IaaS, clients are not worried about the hardware cost, too. Service providers provide high utilization by MVs that reduced operational cost[17].

CONCLUSION

Bringing IT and businesses together to use technology that can best serve the need of business and enterprises is the core concept of cloud computing. Cloud computing is a coup with promising goals for industries and enterprises to do their service and business and use it as a computer utility. For today's businesses their competing is crucial and cloud computing can be a good winning ticket for them. Accessing to their business-pivotal data not only helps organizations and enterprises go ahead but also are necessary for their existence in the market[21].

Many failed enterprises confess that technologies for consumers is considered as first priority, the temptation of being better is so critical that they try to balance between technology and cost optimization. m-Commerce like cloud is a new discovery for businesses. The power of m-Commerce can let for faster response market needs and at the same time consumers. It is undependable from location, cost efficient and available through wireless infrastructure.

This study provides a comprehensive subject to cloud computing and m-Commerce. It is worth mentioning that this research is done for the first time. The main part of study discussed on proposed model. As mentioned, cloud computing with this business architecture can be so beneficial for enterprises. On the other hand, migrating to cloud can be doubtful for some businesses, so some solutions mentioned for them. Another part of research model focused on m-Commerce with its specific architecture with three parts that can be similar to cloud architecture in case of features and duties. Meanwhile, some similarities were critical to mention and can bridge a gap between cloud and M-Commerce in terms of their similar architecture in their duties in enterprises and unique equivalent features that can be classified in scalability, cost and availability.

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