# CLOUD COMPUTING IN E-COMMERCE

## ARYA M NAIR

*MASTER OF COMPUTER APPLICATION, DEPARTMENT OF CSE, MUSALIAR COLLEGE OF ENGINEERING AND TECHNOLOGY, PATHANMTHITTA*

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**Abstract -** *Cloud computing impacts numerous industries, including: e-learning, e-commerce, and healthcare. It offers high-efficiency and low-cost online services which provide a high economic value. This is definitely also the next revolution in the internet and business world. More e-commerce enterprises are currently moving to cloud computing to attain high practical value. It provides an overview of cloud computing in e-commerce by addressing various meanings for both terms, highlighting the advantages and drawbacks of implementing cloud computing in e-commerce, and addressing a proposed E-commerce system for cloud computing. Cloud computing is a computing model, where a broad pool of systems is connected in private or public networks to provide dynamically scalable application, data, and file storage infrastructure. With the advent of this technology, the costs of processing, hosting software, storing information, and distribution are greatly reduced. Cloud computing is a general term for something that includes the delivery of services hosted over the Internet. Ecommerce, also known as e-commerce or internet trade, refers to the purchase and sale of goods or services using the internet, and the transfer of money and data to execute such transactions. Ecommerce is often used to refer to the online sale of physical products, but it can also describe any type of commercial transaction facilitated via the internet.*

***Key Words***: Cloud Computing, E-commerce, Transaction, Internet, Technology

## 1. INTRODUCTION

There's no question that we're living in an age in which things get older when they're still at the height of their modernity, the pace of technological progress is rising and hardly a day goes by without a witness appearing about the critical changes in all sectors, including the company sector. In the past, you had to physically rent an office room to sell goods that added various costs, but Ecommerce emerged and offered companies the ability to sell items online without having to rent a store like before. These days, many more e-commerce companies, especially small and medium-sized businesses, are taking advantage of the benefits of cloud computing, where the growth of this innovation has led them to compete with large corporations in providing goods and services as they have a broad network given their limited network. Businesses have widely recognized the advantages of investing in cloud computing technologies such as efficiency, reliability, improving availability, and rising e-business costs. Cloud computing is a realistic approach to experiencing direct cost benefits and it has the ability to turn a data center from a capital-intensive setup into a priced variable environment. The theory of cloud computing is based on a very basic concept of the capabilities being reusable.

## 2. IMPORTANCE OF CLOUDCOMPUTING IN E-COMMERCE

Cloud computing as "a computing style in which massively scalable IT-related capabilities are offered to numerous external customers 'as a service' utilizing Internet technologies." The concept of cloud computing came to the fore with the launch of Salesforce.com in 1999 and a lot has been done in this area since. Today, there are many benefits e-commerce draws from cloud computing. In e-commerce cloud computing helps the company to digitally look large and run extensively. The value is as follows:

### 2.1 Scalability

Such cloud services sometimes referred to as "elastic" allow a company to rapidly scale up and accommodate seasonal spikes in demand or those caused by special promotions. Cloud Computing enables an ecommerce company to cater for rising consumer demand and scenarios. It allows the services to be upscale or downscale, depending on demand, traffic and seasonal spikes.

### 2.2 Trust

In the early days of the internet, one of the greatest problems facing e-commerce pioneers turned out to be not a technological issue, but a human one: Trust. It took time to build confidence in their networks and establish a collection of online credentials that made customers feel confident beginning an online shopping experience.

### 2.3 Speed

For an e-commerce company, speed plays an important role in staying glued to the customers. A research by Akamai found that if it takes more than three seconds to load, 40 per cent of customers leave a web page. And Amazon reported a 1 percent boost in sales to their site speed for every 100 milliseconds of change. Cloud computing gives greater bandwidth, storage and computational power.

## 2.4 Cost Control

The fee-for-use facility helps you to use the facilities according to your requirement. You don't have to invest in the hardware or software infrastructure as the company develops. Snapdeal released its own private cloud Cirrus in 2016 which the company claims will reduce costs and boost performance. Cirrus, which is based on open source, can help the e-commerce business interpret big data and give its customers a customized experience by knowing the customer's behaviour.

## 2.5 Redundancy

A cloud-based, built-in backup infrastructure can save business from data loss. This will keep the data stable, stable and easily available. An e-commerce company is heavily dependent on customer data. In the event of catastrophic loss of data or security risks, redundancy (or the integrated replication of systems, data, equipment and other components) helps to resolve the catastrophe. The principle of virtualizing large server infrastructures has opened up cloud computing. This has profoundly affected a number of industries around the world. The e-commerce sector is one that has been significantly affected. E-commerce businesses may have their own private cloud and use the cloud computing services to support the e-commerce platform. .E-commerce companies can take advantage of multiple advantages with the use of SAAS cloud computing.

**Trust:** Big internet based MNCs like Amazon and Google are already using cloud computing these days. Businesses operating with these companies will exploit the current cloud infrastructure to reach out to more customers.

**Big Savings:** Cloud storage is highly cost efficient; thanks to its metered approach and contracts 'pay as you go.' Virtualized servers can help companies save up to 80 per cent of their expenses.

**Quick App Setup:** Five times faster than standard servers is the speed at which e-commerce companies can make apps live on the cloud computing service.

**Immense Company Growth:** Businesses have an ability to expand their business at a much faster pace when consumers respond favorably to apps that were produced using cloud computing.

**Clear security:** Providers of cloud storage take deliberate action to guarantee maximum data safety. Some companies are now going through ISO 27001and specific forms of security audits to show their importance to customers. Application, system, and network protection controls can be enforced at all 3 levels.

## 3. ARCHITECTURE OF E-COMMERCE CLOUD AND WORKING

The typical e-commerce chain consists of the hardware manufacturer, software developer, Internet service provider, network integration provider and service provider where they function as the company's backend and provide the technical support. Although the structure of the e-commerce industry chain will change when the cloud infrastructure is migrated into e-commerce. Throughout his research (Akinyede, 2018) the researcher Akinyede introduced a new paradigm for using cloud computing throughout e-commerce applications to solve problems related to lack of resources and the environmental cost of designing and implementing an e-commerce program. It is composed of five layers and this reduces the time and cost of hardware and software implementations. It consist of -hardware resource (HR), software resource (SR), resource management (RM), server, and business layers. The HR layer is the lowest layer in the cloud service middleware, and the system's most critical infrastructure. Physical servers, network, and storage are listed as the main computing framework with the aid of virtualisation. For continuous power supply to cloud middleware e-commerce network servers, physical host pool will be dynamically extended while the memory will be flexible for additional memory support at any time virtualized as offering a versatile and scalable framework to allow efficient use of resources. Several software solutions will be merged to deliver a clustered gui as well as cloud-based application creation and embedding. In addition to the hardware layer, the resource management layer is responsible for both sharing hardware resources and implementing mandatory access control rules depending on the hardware resources that are available. It plays an significant role in the last two layers of management. It gets loose coupling of resources from the software and hardware.

## 3.1 Service Models

Service layer is divided into three- Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS).

### 3.1.1 Software as a Service (SaaS)

The capacity granted to the user is to use the software that the provider operates on a cloud infrastructure. The programs can be accessed from various client devices through either a thin client interface, such as a web browser (e.g., cloud-based email), or a software interface.

### 3.1.2 Platform as a Service (PaaS)

This offers a framework that allows clients to design, run, and operate applications without the difficulty of constructing and managing the infrastructure usually associated with the creation and launch of an app. PaaS delivered in three ways

I.  As a provider's public cloud service, where the user manages software delivery with limited configuration options, and offers networks, servers, storage, operating system (OS), middleware (e.g. Java runtime,.NET runtime, integration, etc.), database and other web hosting services.

II. As a private (software or appliance) service inside the firewall

III. As applications implemented as a device on a public network.

### 3.1.3 Infrastructure as a Service(IaaS)

Cloud computing which provides internet virtualized computing services. This offers additional tools, such as a virtual-machine disk picture library, IP addresses, firewalls, VLANs, and other software packages. IaaS-cloud providers on-demand these services from their large pools located in data centers. Organizations may use either the Internet or carrier clouds (dedicated virtual private networks) that IaaS clouds offer for wide-area network connectivity. It also provides a popular interface for large-scale integration of cloud computing which allows calculation publishing.

### 3.2 Deployment Models

### 3.2.1 Private cloud

A single company containing multiple clients / consumers (e.g., business units) provides the cloud infrastructure for select use. It may be owned, controlled and run by, or any combination of, the company, a third party, and it may exist on or off premises.

### 3.2.2 Public cloud

The cloud infrastructure is being given to the general public for free use. It may be owned, managed, and controlled by, or some combination of, a corporation, academic, or government agency. This operates at cloud provider premises.

### 3.2.3 Hybrid cloud

The cloud infrastructure is a composition of two or more distinct cloud infrastructures (private, community, or public) that remain separate entities, and are connected together by standardized or proprietary technology that enables mobility of information and application (e.g. cloud bursting for load balancing between clouds).

### 3.2.4 Community cloud

A particular consumer community from organizations that have shared concerns (e.g., mission, security prerequisites, policy, and compliance considerations) provides the cloud

framework for selective use. It may be owned, maintained, and run by one or more community groups, a third party, or any combination thereof, and it can exist on or off premises.

### 3.3 Characteristics of Architecture

### 3.3.1 Self-service on request

A buyer may arrange computing resources, such as server time and device network storage, as needed naturally without requiring human contact with. Service provider.

### 3.3.2 Pooling of resources

The computing resources of the company are pooled to support multiple customers using a multi-tenant model, with various physical and virtual resources being efficiently distributed and reassigned upon request by the buyer. There is a sense of location autonomy in that the consumer typically has little influence or knowledge of the exact position of the services offered but may have the ability to assess position at a higher level of abstraction (e.g. region, state, or data centre). Ressource examples include bandwidth storage, processing, memory, and network.

### 3.3.3 Broad network access

Client platforms such as mobile phones, tablets, laptops and workstations can be advanced via the use of standard devices over the network.

### 3.3.4 Quick versatility

Capacities can be supplied and discharged flexibly, often according to demand, to rapidly scale outwards and inwards. The resources accessible for provisioning always seem limitless to the user and can be allocated in any amount whenever possible.

### 3.3.5 Measured service

Cloud systems automatically monitor and optimize resource usage by using metering features that are relevant to the form of service at some level of abstraction (e.g., storage, processing, bandwidth and active user accounts). Usage of services can be reviewed, monitored and recorded, thus ensuring accountability for both the provider and the user of the service used.

### 3.4 Business Application Layer

It goes about as the framework's business logic and frames the extension of its component group. It recommends how business objects interface with each other and enforces the routes and strategies to get and update business objects by. It will allow customers to attach products to a shopping cart, indicate a shipping / delivery address, and provide details about the payment. The site's business logic would also

include a work cycle, such as the sequence of events that take place in the middle of checkout, such as a multi-page form that initially asks for the shipping / delivery address, at that point for the billing address, the next page will include the payment method, and the last page will be congratulated. The product company rule would include inserting an item more than once from the item description page increases the quantity for that item and different formats to be accompanied by the customer's address, email address and credit card information. This would also implement a special contact protocol for communicating to the credit card network. Specific SaaS resources can be used to provide a variety of functionality aspects that enable businesses to use the cloud platform to operate and manage business processes.

## 3.5 Cloud Application Layer

It is the layer which is available to cloud end users. Customers typically access the services that this layer offers via web portals, and are often forced to pay fees for their use.

## 3.6 Cloud Middleware Layer

Cloud Middleware Layer is usually placed between an application and the operating system. This brings the company diverse functionalities. It helps in the development of business applications, encourages simultaneity, transactions, threading and messaging; and provides a framework for service component architecture to create service-oriented architecture (SOA) applications. Web servers, application servers, and databases are cloud middleware instances. Middleware systems by and large provide communication tools and represent a messenger's need, with the aim of sending and receiving messages from various applications. Multiple applications located at different physical locations can be "tied" together to play a role via middleware in the cloud.

## 4. ADVANTAGES AND DISADVANTAGES

## 4.1 Advantages

### 4.1.1 Cost savings

Reducing IT resources, installation and implementation. As the e-commerce industry grows with increased data growth, the need for computer hardware and software resources increases. As a result, costs associated with equipment and operations maintenance will need to be taken into account.

### 4.1.2 Scalability

The demands of business are constantly changing. Cloud computing allows IT to swiftly adapt to these changes. One of the most critical benefits of cloud computing is the ability to scale depending on clients' demand. Some of the choices such as server activation, higher processing capacity, load

reallocation, etc. will occur fairly quickly. Such operations effectively describe the cloud's scalability and versatility to add more resources when needed, and dispose of them when cloud users no longer need them.

### 4.1.3 Performance

IT companies, through growth and creative work, will focus on their industries and profit.

### 4.1.4 Availability and Mobility

Customers can access services and products anytime, anywhere, through smartphones. If users fly around the world, the products can still be accessed through their smartphone.

### 4.1.5 Simple Maintenance

Hardware, software, and even network maintenance is streamlined.

## 4.2 Disadvantages

### 4.2.1 Security

The key challenge is to access, change, or even kill data during processing or transmission. Until now, systems and data are difficult to secure and there are no practical solutions.

### 4.2.2 Data Privacy

This is an significant problem, so far no technological solutions are required to protect the details of the clients.

### 4.2.3 Data Storage

Cloud service clients are concerned about their inability to monitor the location of stored data.

### 4.2.4 Trust

As a concept trust is "the degree to which a target object such as software, computer, server, or any data they provide is considered secure." Until now, it is difficult for customers to differentiate between good and bad e-commerce sites.

### 4.2.5 Connectivity

In cloud, the user must be linked to the Internet to access shared knowledge or services.

### 4.2.6 Service standards issues

No information available to businesses about the mode of operation, the technology used, and the situation of staff that

allows customers to worry about using cloud computing without knowing these details.

## 5. CONCLUSION

Cloud infrastructure offers e-commerce businesses with good incentives. Cloud computing creates a digital platform that incorporates all e-commerce services and enables new service modes. E-commerce business will collaborate with cloud service businesses to improve operating capabilities. Cloud computing provides space flexibility and huge support for infrastructure and software, this increases revenue, expands business and creates new jobs not only in the business sector, but also in large sectors. It plays a critical role in smart economy. Today, more e-commerce companies are taking advantage of cloud computing's benefits.

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