

E-Commerce Using Cloud Computing: A Little Endeavor

Subhendu Chatterjee

Department of Computer Science, Gour Mahavidyalaya, Malda, West Bengal, India

Corresponding author: subhmahal@gmail.com

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ABSTRACT

Cloud computing influences various industries, including: e-learning, e-commerce, as well as healthcare also. It immolations high-capability as well as low-price online services which are offers a high fiscal value. This is absolutely also the later rebellion in the internet and trading world also. Most of the e-commerce ventures are presently inspiring to cloud computing to gain huge feasible value. It furnish an overview of cloud computing in e-commerce industry by accosting different explanations for both rank, highlighting the leverages and impediments of enforcing the cloud computing in e-commerce, and accosting a prospective E-commerce scheme for cloud computing. The cloud computing is a famous computing model in this era, where a spacious mere of schemes is linked in a private or public networks for providing in consistently scalable request, data, and file storage framework. With the emergence of this technology, the expenditures of processing, software hosting, ware housing of information, and disbursement are enormously decreased. Cloud computing is the common term for whatever that comprises the distribution of services which are hosted upon the Internet. E-commerce which is also known as e-commerce or internet trading encompasses to the buy and sale of goods using the internet, and the transfer of money as well as data for executing these negotiations. E-commerce is often used to assign to the online sale of substantial products, but it can also define any type of economical deal expedite through the internet.

Keywords: Cloud computing, e-commerce, hosting software, trading world

The terminology “cloud computing” has been furiously debated, depiction both disdain and glorification from various communities of the I.T. sectors. At its nucleus, the term assigns to the outsourcing of data centers and operation services to a distant provider under a pay-as-you-use basis. This ‘metered’ accession

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lowers price and curtail the complexity, together grant the business to absorb excessive services “on-demand”. Nowadays Cloud Computing and e-commerce are two jargons. These are so popular since both are very much cost-effective. From the IT infrastructure side, Cloud Computing saves institutions for the cost; on the other hand e-commerce grants shippers to do trading without lease or purchasing an individual shop.

Now a day, exceeding number of e-commerce community shift to the Cloud environment. The Cloud contributes some decisive scope for the e-commerce, but before fulcrum it, companies should have the trade-off.

It should be declared here, since my article aspiration is to discuss about the relationship between Cloud Computing and e-commerce, the purchaser, client and the users are mentioning to e-commerce companied; so they are the clients of CSPs.

There is no question that we are alive in the era in which a few find primitives now they are yet at the level of their bloom, the motion of technical advancement is proposing and barely a day goes by except an at tester rising about the trouble some modifications in all regions, along with the company sector also. Former, we have to hire an office room physically to sale our products that joiner different costs, but E-commerce materialize and suggested companies the caliber to sale their products online except having to hire a store or room like previous. These days, a lot of e-commerce companies, especially small or medium-size merchandise, are adopting the benefits of the advantages of cloud computing, where the prosperity of this novelty has propellant them to wrestle with large companies in preparing stuffs and services as they bear a large network conferred their confined network. Businesses have extensively perceived the benefits of conferring in cloud computing mechanisms such as ability, authenticity, developing opportunity, and growing e-business charge. Cloud computing is a pragmatic pathway to encounter immediate benefits of expenses as well as the caliber to switch a data center from a fund-exquisite setup within a priced volatile ambience. The theory of cloud computing is the basis on a fine basic idea of the potentialities being redivivus.

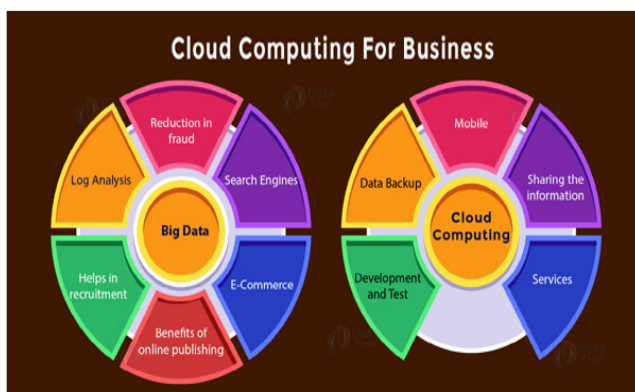


Fig. 1: Cloud Computing for Business^[19]

Why Cloud?

Though this perception has been suggested for a few years, but unfortunately there is no honor explanation for it still today. Several people set several speculations about Cloud Computing. Thus, many explanations have been recommended from various viewpoints. “A Cloud Computing is a method of analogy as well as distributed system comprising of a procures of inter-linked and virtualized computers those are inconstant prepared and introduced as one or more ordinate computing assets basis on service-level contracts settled down via interlocation between the service provider and clients”^[1]. This type of explanation views Cloud as a type of mechanism on the other hand, few other people behaves Cloud as a resource. Another explanation illustrate, Cloud as a massive pool of freely usable and available virtualized resources those

could be hardware, improvement platforms and/or all services. All of these resources can be reconstructed to synthesize to a changeable load irregular, permitting also for superseding resource usage^[2].

Cloud Architecture

Cloud framework assign to the discrete factors in terms of software potentiality, databases, operations, etc. engineered to advantage the potentiality of cloud resources to explain all the problems of business. Cloud framework describes the factors as well as the relevance among them.

The different factors of Cloud framework are:

- ❖ On proposition resources
- ❖ Cloud resources
- ❖ Software factors and services
- ❖ Middleware

The entire cloud framework is purposed at providing the clients with high bandwidth, granting clients to have undisturbed access to data and operations, on-demand lithe network with probability to shift promptly and methodically between servers or nonetheless between clouds and almost gravely network security. The application layer of network consists of the applications which are run in the Clouds^[3].

The different cloud based services have their own noticeable and uncommon cloud frameworks. There are three main layers of cloud computing: Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS)^[4, 5, 6].

Infrastructure as a Service (IaaS): The effectiveness offered to the client is to measure processing, storage, networks, as well as other principle computing resources where the client is capable to expand and run capricious software, which can consist of operating systems and also applications. The client does not maintain or regulate the hidden cloud infrastructure but has regulated over operating systems; storage, deploying applications, and probably limited restraint of select networking components like host firewalls.

Platform as a Service (PaaS): The effectiveness offered to the client is to deploy onto the cloud infrastructure client-created or earned applications construct employing programming languages and appliances permitted by the provider. The client does not maintain or regulate the elementary cloud infrastructure including network, servers, operating systems, or storage, but has to regulate over the deployed applications and possibly application hosting habitat compositions.

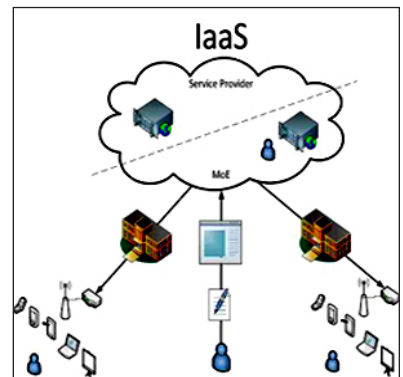


Fig. 2: IaaS^[19]



Fig. 3: PaaS^[19]

Software as a Service (SaaS): The effectiveness offered to the client is to measure the provider's operations functioning on a cloud infrastructure. The operations are available from different clients' devices via a slender client interface such as a web browser like web-based email. The client does not maintain or regulate the underlying cloud infrastructure including network, servers, operating systems, storage, or even individual application effectiveness, with the potential anomaly of finite user-specific operation composition settings.

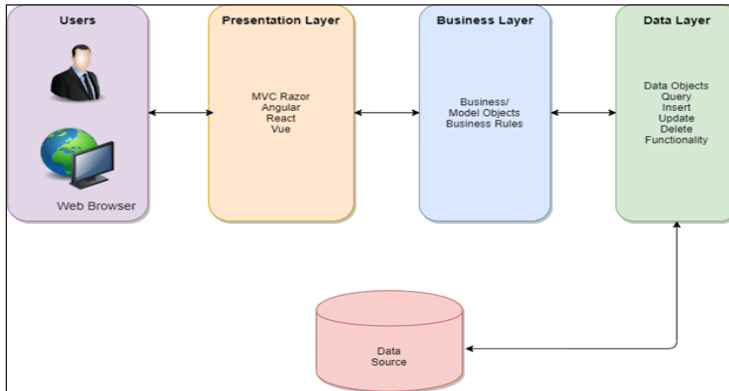


Fig. 5: Layered Architecture for Cloud Computing in Business^[20]

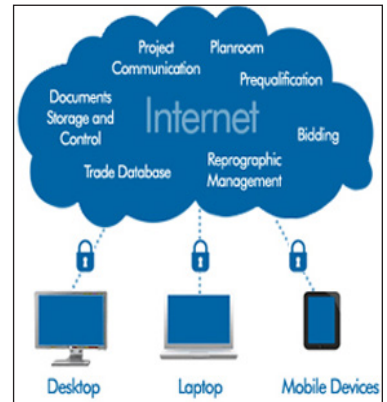


Fig. 4: SaaS^[19]

Cloud Models

There is no hesitation that Cloud computing works for numerous use cases, but not all the Cloud is the same one. There are three fundamental idea Cloud services can be delivered: public Cloud, private Cloud and Hybrid Cloud^[7].

1. Public Cloud: A Public Cloud is a service distribution model which produces extensively scalable IT resources convenient to the common public via the Internet. Public Cloud produces a shared platform those are usable to the common public via an Internet connection. It is frequently based on a use-based model. It allows systems and services to be simply usable to common people. The IT giants like *Google*, *Amazon*, *Microsoft* and many more offer cloud services via Internet. Amazon EC2, Google App Engine and Force.com are best known examples of public Cloud service providers.

Private Cloud: Private cloud is also known as an internal cloud or corporate cloud. Private cloud contributes a high level of privacy as well as security of data through firewalls and internal hosting also.

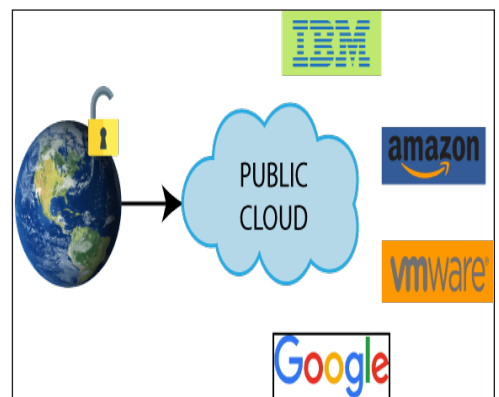


Fig. 6: Public Cloud Model^[19]

It also secure that operational and emotional data are not usable to the 3rd party providers. In a contradiction, Private Cloud means a deployment model that grant Cloud services to the inward users along with the corporate network also. It is comparatively protected and analogy with Public Cloud. HP Data Centers, Microsoft, Elastra-private cloud, and Ubuntu are the example of a private cloud.

Hybrid Cloud: The Hybrid Cloud is a configuration of private and public cloud. The main aspiration to associate these clouds is to constitute a cooperative, automatic, and well-handled computing habitat. Organizations are contributing and governing some resources internal and at the same time, have others equipped externally. It allows a business to take leverages both of public cloud as well as private cloud. Thus, this Cloud is treated as the later wave in Cloud Computing.

Community Cloud: The Community clouds are a combined design of private clouds create and driven explicitly for an aimed group. These communities have same cloud obligation and their conclusive target is to work simultaneously to attain their business motive. These clouds are mostly planned for businesses and organizations working on joint venture projects, applications, or researches, which needed a centralest cloud computing benefits for making, governing and assassinating such projects, irrespective of the answer rented.

Example: Our governmental organizations within India may share computing Infrastructure in the cloud to handled data.

Advantages of Cloud Computing

Its virtual: Supposes helf of servers, liltng toward in a data center. Simultaneously, these servers become a large pool of resources. Segregate this “pool” into several virtual servers and we construct a “cloud.”

It can be easily secured: For the absolute security, construct a private cloud on devoted hardware. But constantly remind to put pertinent security steps in place, no matter which cloud we prefer.

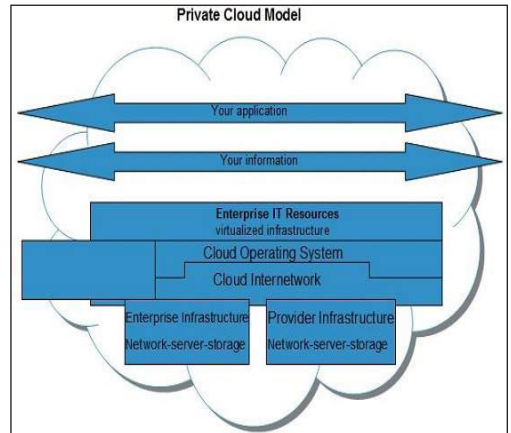


Fig. 7: Private Cloud Model^[19]

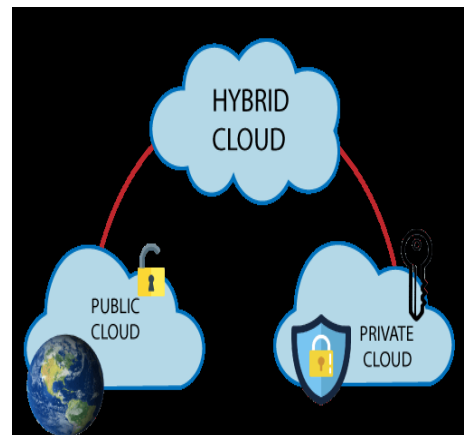


Fig. 8: Hybrid Cloud Model^[19]

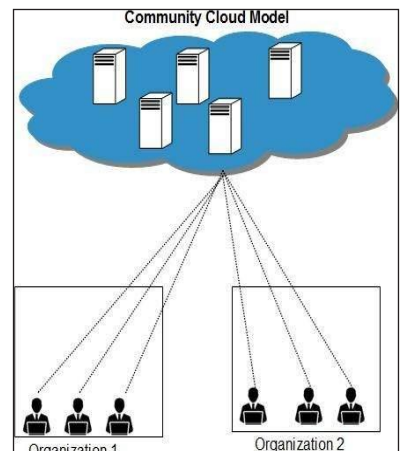


Fig. 9: Community Cloud Model^[19]

It is flexible as well as scalable: Till today virtual servers are not real, they are magnificent flexible and giving us what we demanded at the moment. Twisted up a server in a minute, and take it downward just simply.

It can be affordable: We are getting the greatest money savings in the public cloud, where our virtual servers run on real servers that we share with other clients.

Its open or closed: In an open cloud, we can simply shift our cloud everywhere; without being sealed into one provider or a closed, proprietorship technology.

It can be secured also affordable: A hybrid cloud gives us the advantages of both public as well as private clouds also. For example, we can put public facing materials in a public cloud, whereas clients' sensorial data is storing in a private cloud^[8].

Disadvantages of Cloud Computing

1. **Security of Data:** The key threat is to approach, exchange, or even killing the data during processing or dispatch. Till now, systems and data are troublesome to protect and there are no applied explanations.
2. **Privacy of Data:** This is a momentous trouble; still there are no scientific explanations are needed to save the details of the customers.
3. **Storage of Data:** Cloud service customers are anxious about their ineptitude to guide the position of stored data.
4. **Trust:** As a conception trust is "the grade to which a goal object like software, computer, server, or any data they furnish is treated ensure." Till today, it is onerous for clients to extricate among good and bad e-commerce sites.
5. **Connectivity:** In cloud, the user prerequisite is connected to the Internet to approach shared wisdom or services.
6. **Issues of Service standards:** There is no information possible to businesses about the method of operation, the technology used, and the position of staff that grant clients to annoy about using cloud computing without knowing these details^[8].

Benefits for Cloud Providers

1. **Make money:** Regularly benefit is the most glamorous thing for any business men. It parades a big company acted as a Cloud provider could do a prim benefit when they bargaining chip their money of scale to grant a service.
2. **Leveraging existing investments:** Managing existing useless of IT infrastructure to delivering Cloud service qualify companies to have a new proceeds stream. For example, Amazon and Google are extended their private Clouds and provided to the public.
3. **Defend a franchise:** From many of trading applications commence to make adopt of Cloud Computing, merchants would be inspired to provide a Cloud preference of their own if they previously settled franchise in those applications.

4. **Leveraging of customer relationship:** Enterprises can get considerable client relationship through their service offerings, include Cloud services.
5. **Become a platform:** Sometimes, institutions are wanted to furnish Cloud services in order to become a platform. The surely infrastructure provider of Facebook plug-in application is a Cloud provider called Joyent. On the other hand, Facebook's motivation was to make their application to be a new development platform^[8].

Benefits for Cloud Consumers

1. **Pay as used.** Small-scale companies do not demand to invest in the inaugural IT infrastructure and manage them if they take up Cloud. They can easily pay as they used. In this style, small-scale companies can deduct the misuse of underutilization.
2. **Reduce operation cost.** Since effectiveness Computing uses virtual machine in place of physical device, the work of hardware operation is transferred from Cloud clients to Cloud providers. Institutions can deduct their operational price in this course^[8].

Benefits for End-Users

End-users of Cloud service truly area unit the foremost necessary users. For the end-users of Cloud Computing, the impetus area unit almost like those inspiring enterprises as well as organizations. They need simple-to-use interfaces, fitly reliable and forehand service delivery, info concerning their services, etc. With Cloud Computing, end-users will access and update info where they're, instead of having to run back to their offices. Furthermore, Cloud Computing bring about a higher time interval than customary server and hardware in utmost cases.

Limitations of Cloud

Cloud Computing delivers several scopes for each Cloud suppliers and clients, nonetheless, its limitations. In terms of the limitations, we'd like concern to contemplate about completely several models of Cloud: Public Cloud, non-public Cloud and Hybrid Cloud. The key limitations of them are self-addressed earlier^[8].

What is E-commerce?

Electronic commerce, unremarkably called e-commerce, could be a kind of trade wherever shopping for and marketing of product or service is directed over electronic systems like the net and different computer system networks. E-commerce attracts on technologies like mobile commerce, electronic funds transfer, offer chain management, web selling, on-line dealing process, Electronic Data Interchange (EDI), inventory management systems, and automatic knowledge assortment systems. Fashionable e-commerce usually uses the World Wide internet a minimum of at one purpose within the transaction's life-cycle, though it should cover a wider variety of technologies like e-mail, mobile devices social media, and telephones additionally.

E-commerce is mostly thought-about to be the sales facet of e-business. It additionally consists of the exchange of information to facilitate the funding and payment aspects of business transactions. This can be an efficiently good and efficient approach of act inside a company and one among the foremost effective and helpful ways in which of driven business.

Categories of E-Commerce

When we speaking about categories of e-commerce, there is a general thought which is shared by public in the industry. This thought bear that, e-commerce can be splits into four major categories: Business-to-Business (B2B), Business-to-Customer (B2C), Customer-to-Business (C2B) and Customer-to-Customer (C2C).

1. **Business-to-Business (B2B):** E-commerce mean to electronic dealings among businesses.
2. **Business-to-Customer (B2C):** Companies trend to sell on to customers; whereas business-to-consumer e-commerce involves folk's commercialism merchandise and services to businesses. Amazon.com is a typical business-to-customer company.
3. **Customer-to-Business (C2B):** C2B businesses permit people to sell product and services to corporations. During this e-commerce model, a website may permit customers to post the work what they need to be concluded and have businesses offer for the chance. Branch marketing services would also be treated C2B.
4. **Customer-to-Customer (C2C):** It mentions to business dealings between users, for instance, customers selling products to other customers through net. EBay and Taobao are two companies who are provide the platform for Customer-to-Customere-commerce^[9].

Benefits of E-Commerce

E-commerce has modified the method of looking. E-commerce activity is distributed naturally. Patrons and sellers will do e-commerce at anytime from anyplace with a Computer of other peripherals that is linked to the net. It's enticing to each clients and businesses, and, even to the community. The report can address these advantages for shopper, business and society severally^[10].

1. *Benefits to Businesses*

- ❖ E-commerce contributes a world marketplace for businesses. With e-commerce, businesses have access to individuals everywhere the globe.
- ❖ E-commerce protects operational price for businesses; as a result of the price of storing, processing, distributing and telecommunication has been belittled.
- ❖ The pull-type method of e-commerce permits for merchandise and services to be bespoke in keeping with the customer's needs^[10].

2. Benefits to Consumers

E-commerce offers consumers most convenience. E-commerce amends the relative influences of our time. Customers will visit multiple vendors from round the world on-line, compare costs and create purchases while not exploit their homes or offices at any time.

3. Benefits to society: Society cans also gaining from e-commerce from the following viewpoints.

- ❖ As e-commerce permitting folks functioning at home, it enhances the standard of life for folks within the society.
- ❖ People in village areas are permits to access and revel in product, services and knowledge by e-commerce.
- ❖ E-commerce expedites the distribution of public services like health services. It standard to consult doctors or nurses on-line today^[10].

Cloud Computing in E-Commerce

Now a day's Cloud Computing and e-commerce space the units of two buzzwords. They're in style as a result of each of them is efficient. Cloud Computing protects organizations the value of IT infrastructure whereas e-commerce permits merchants and do their business while not rental or shopping for an entity look. At present, additional e-commerce corporations are shifted to the Cloud. Cloud contributes certain scope for e-commerce. However before adopting it, corporations ought to have a trade-off. This article can concentrate on investigation as well as the intersection of Cloud Computing and e-commerce. It ought to be explicit here, since this report goal to debate regarding the link between Cloud and e-commerce, the "customer", "consumer" or "user".

Pest Analysis for the E-Commerce Industry

PEST analysis is employed to look at however political, economical, social science and technical factors have an effect on a corporation or a trade^[11]. It is an effective instrument to assist setting analysis.

1. Political

- ❖ Backing from government. EU cheers up the flourishing of e-commerce.
- ❖ Simple office of the State Council of China has discharged a series of evidence to quicken the flourishing of e-commerce these years.

2. Economic: The speedy growth of the world economy quickens the flourishing of online transaction. The expansion of average income permits more and more people to entry to computers and the net.

- ❖ The devaluation of hardware and software prices.
- ❖ Costing of access to the telecommunications infrastructure is decreased.

Table 1: World Internet users and population statistics^[19]

World Regions	Population (2019 Est.)	Population % of world	Internet Users 30 June 2019	Penetration rate (% Pop.)	Growth 2000-2019	Internet World %
Africa	1,320,038,716	17.1%	525,148,631	39.8%	11,533%	11.9%
Asia	4,241,972,790	55.0%	2,200,658,148	51.9%	1,825%	49.8%
Europe	829,173,007	10.7%	719,413,014	86.8%	585%	16.3%
Latin America/ Caribbean	658,345,826	8.5%	447,495,130	68.0%	2,377%	10.1%
Middle East	258,356,867	3.3%	173,576,793	67.2%	5,184%	3.9%
North America	366,496,802	4.7%	327,568,628	89.4%	203%	7.4%
Oceania/ Australia	41,839,201	0.5%	28,634,278	68.4%	276%	0.6%
World Total	7,716,223,209	100.0%	4,422,494,622	57.3%	1,125%	100%

3. Sociological

- ❖ Online marketing is suitable a new tendency as it is more comfortable assimilate to conventional marketing.
- ❖ The level of learning and IT proficiency of clients have been elevated. Particularly in the flourishing countries like USA, Britain, China, etc. the study of IT efficiency has been elevated comprehensively in current years.
- ❖ User's compliance and caliber to endorse the new technology.

4. Technological

- ❖ The advancement of telecommunications infrastructure quickens the improvement of e-commerce industry.
- ❖ The speedy improvement of graphical style of technology permits web site developers to style a lot of engaging and easy websites for purchasers.
- ❖ The information security technologies are improving very quickly.
- ❖ The arrival of service based computing, Web services and Web 2.0 technologies etc.^[12].

Impacts of Cloud Computing on E-Commerce Industry

- ❖ Cloud oriented e-commerce applications' lower prices and rapid expansions qualify IT and business bosses to appraise new scopes except large upfront ventures.
- ❖ The extensive selection of cloud oriented e-commerce applications and integration platforms offer IT leader's nice resilience once selecting preparation models and suppliers.
- ❖ Cloud computing sort out the requirement of buying hardware as well as software system and allows e-commerce firms to charter the applications and hardware.

- ❖ E-commerce firms will begin with the fundamental necessities and upgrade their computing resources as their client base develops with the time.

Influences of Cloud Computing Upon E-Commerce

- ❖ Cloud computing permits E-commerce firms to hire instead of purchase hardware and computer code.
- ❖ By the virtue of the cloud computing platform Associate in nursing e-commerce firms will select and hire IT merchandise and services supported its demand therefore on establish the technical design.
- ❖ Cloud computing will give associate degree of fiscal trustworthy e-commerce system; SaaS may be a quite computing software that usually contributes this service.
- ❖ Cloud computing will give smart economical potency for the appliance of commercial enterprise e-commerce.

Benefits of Cloud Computing for E-Commerce

The cloud computing and e-commerce extremely have the advantages of the web. Cloud computing permits customers and purchasers to use services, machine resources and storage during a crystalline manner. E-commerce on the alternative aspect, permits customers to buy for services or product from as regards to anywhere inside the globe at anytime. The cloud computing for e-commerce has many advantages^[13]. The values are often predicted and supported the necessity of every company. In keeping with Amazon, cloud computing assist businesses to considerably cut back the prices on many places like hardware attainment, security, privacy, energy, as well as maintenance also.

1. Trust and Security of cloud computing: The security of information as well as data hold on within the cloud is a vital concern by everybody^[14]. The thought of trust isn't simple to define; but, several cloud computing users accordant that clarity is vital once it involves trust problems in cloud computing. The companies should clearly see that the service suppliers so adhere to security standards and best practices. Storing knowledge within the cloud for e-commerce applications is mostly thought of the simplest selection.

2. Investments tailored to the needs of e-commerce: It seems that the cloud computing permits e-commerce firms to save lots of prices up to eightieth that may be a vital quantity. Given this savings, there's never-ending ought to maintain and even enhance IT infrastructure for the long run development of e-commerce business. The scalability and resilience are two vital advantages of cloud computing as applied to the e-commerce.

3. Cloud computing scalability: One of the foremost prerequisite advantages of cloud computing is its caliber to scale supported the requirement of the cloud shoppers or businesses. Several of the operations like activation of the server, expanding the computational power, to allotments the hundreds thanks to dynamic demands on the cloud will surface comparatively quickly. These operations primarily outline the scalability of the cloud and therefore the flexibility to apportion a lot of resources once requested and taking out them after they are not any longer required by the cloud users.

4. Mobility: E-commerce advantages from cloud computing by permitting its customers access merchandise and services from anyplace and anytime through mobile devices. If the users travel all round the world, they will still have access the products through their smartphones.

5. Global expansion: Cloud computing are often thought of developing methods for present and future world enlargement of e-commerce businesses. The e-commerce goods objects can be readily accessible to the consumers within the world through the employment of cloud computing. Cloud computing may also support to conducts varied e-commerce businesses specific to consumers among many various countries.

6. Cost of construction and operation: As the e-commerce trade climb with the accrued knowledge growth, the requirement for the computer hardware and software resources broaden. As a result, prices related to maintenance of kit and operations can get to be held into thought.

7. Quality of e-commerce: In order to preserve the standard of e-commerce, the computing services should be scalable, dependable and supply resilience of access to merchandise and services from anyplace and anytime within the world. Several of the broad cloud service suppliers like Google, Amazon, IBM, or Microsoft have their information centers unfold across the world so as to ensure dependableness in accessing the cloud applications in cases of collapse^[15].

Problems in Developing an E-Commerce Application by Cloud Computing

Cloud computing may be a new contemplation mode applied to e-commerce. The combination of cloud computing and e-commerce has not nevertheless reached a evolve stage and still wants the check of observe. At present, there are a unit still several issues that require to be solved^[16, 17, 18].

1. Security issues of cloud platform: The conventional security necessities, like the validity of authority, info integrity, no abrogation, genuineness of identity problems square measure easier to be explained within the cloud computing model. Nonetheless, the confidentiality of data, network security and a few alternative problems haven't been solved nevertheless. What's additional, some new security problems conjointly seem.

2. Challenges: For some e-commerce firms, trust the work to the third party consists of some components of risks. Going an excessive amount of the risks could also be bigger than the advantages for the business.

3. Cloud data security: Cloud knowledge security includes knowledge security and fearless of privacy. At present, public cloud, private cloud, mixed clouds and different ideas are planned and bit by bit applied to observe. However whether or not they are feasible remnant to be any validated.

4. The standard that cloud computing services provide: The cloud-based e-service model continues to be in an exceedingly fragmented state. If we actually need to push and dispense these new models, a concerted trade normal ought to be improved.

5. Regulatory issues of services: Information process, knowledge storage, security, maintenance and alternative work area unit sometimes restrained by the cloud service suppliers in cloud computing atmosphere. Then, the service supplier's position can become crucial to properly handle info the knowledge the data that's associated with the user's information security. Therefore, the way to monitor service suppliers, to control their services, and management their behavior area unit the problems that area unit imperative to be addressed.

6. Lack of relevant laws and regulations: At present, there are no any resembling laws and rules to

manage the pertinent e-commerce functions beneath the cloud computing atmospheres. Due to lack of laws and rules, some authentic issues in application can't be resolved and mentioned.

CONCLUSION

Through the analysis we tend to believe that, we are able to produce associate in e-commerce application model supported by cloud computing it means that of cloud computing mass knowledge storage, high-speed computing efficiencies, yet as its perfection appropriation and therefore the distributing mode of resources. Thus, this formation can open up a replacement area for the graceful development of e-commerce. However, these e-commerce models are still within the initial stages of research and applications. Some issues like platform security, technical value, prevailing and substitutive services don't seem to be well solved. However in observe imperfect additional analysis and research. In other way, e-commerce application model supported cloud computing won't stop its movement to forward. Because the cloud computing technologies are turn a lot of subtle and also the applications of cloud computing become progressively comprehensive, e-commerce will definitely inaugurate a brand new era of cloud computing.

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