Cloud Computing, Exigency, Issues, Solutions: A survey

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Abstract. In the era of digitalization all over the world, cloud computing is the ubiquitous supreme technology that provides many computer resources and data storage network to the consumers smoothly on-demand. Many researchers of both academics as well as industries are proactively indulge in providing the benefits of cloud computing to the society. As per ray of IT industries is increases drastically also leads in the need of network of dynamic nature. This dynamic and scalable nature of cloud computing creates hurdles in security of data appears in the network. Mainly, three services are the centre of study in cloud computing i.e. Saas, Paas, Iaas. Several security aspects namely multitancy, variability, trouble in data and hackers attacks also focused on priority basis. This paper demonstrate the conceive outlook of latest issues related with cloud computing and the solution of issues. Many authors also convey several methodologies for cloud computing. It is especially recommended to newcomer ensuing their study in field of cloud computing to find the solutions related the issues of cloud computing.

Keywords: Cloud Computing, Cloud Security, Authentication, Issues, Solutions.

1. Introduction
In modern world, The need of smart computers and mobile gadgets are expanded throughout the world. This fashion is on peak due to Universal demand and N number of traders are to spread their business in geological pattern in order to build their growth and maintain stability among their competitors. In a way to fulfill the requirements, There must be important to Qualitative use of resources in regards of viable goodness. Thus, Cloud Computing is the new emerging technology help to sort out the demands. Although, Cloud Computing contributes a handsome popularity in year 2000 in the market [1]. Basically, Cloud computing provides services of Information Technology instead of materials. On the basis of survey, It is predicted that, Reach of cloud computing will come across more than 15 trillion as IT fare which is directly proportional to the cloud computing technology. Cloud computing consist of virtual machines, having fixed network ranges processing and many more abilities. The devices based on cloud computing works openly on cloud computing nodes. so. there is huge amount of errors can be occur because of big data and possibilities of Fault, Error and failures.[2].Cloud Computing consist of five consists of five indispensable features i.e on-demand service provider, broad network access, resource pooling, flexibility, optimistic services. Although, Cloud Computing gives the three distinct models are (Iaas) “Infrastructure as service”, the Iaas helps in sharing of data. Second one is (Paas) “Platform as services” name also depicted that it provides fields for the development of new devices & third one is Saas “Software as service”. Saas provides delivery of required software on user demands.
Types of Cloud Computing.

Cloud Computing can be granted as “degree of accessibility”. Hence. It can be classify as Hybrid, Community, Private, public shown by figure 1.

![Types of Cloud Computing](image)

Figure 1. Types of Cloud Computing.

Cloud Computing is a trendy flourishing system having on-appeal management and versatile nature. Nominally, Almost whole data of consumers are available on in cloud storage. Protection of information is the key point, specially the business standards data [3] of Information mainly focus on ‘data privacy’, ‘Accessibility’, and ‘Honesty’. Affair related with protection of data originate because of involvement of such parameters are creation, Communication, Utilization, Distribution, Authentication [4] of whole circulation in cloud system. Cloud is a type of infrastructure having enormous data, which is to be utilize and interconnect with storage of data by computerization technology.

1.1. Literature survey

Lots of research would be done in the reference of this new emerging technology Cloud Computing. CC computes the data of user in cloud storage. The main work of CC are Computation and Evaluation by protecting the data from several aspects. Many Technologies and algorithm are given by researchers in concern of security and their issues. Dinesh et al.[5] gives to vanish the security problem in cloud storage. Author presents blowfish algorithm. In this method, first check the validation of user, then divide the exported data with the help of pattern matching algorithm, rest data
can be encrypted by blowfish algorithm. By using this method, it is impossible to crack the privacy of the network. P. Kanimozhi et al [6] apply cryptographic algorithm on the data collected from several devices. In methodology, the data are clustered by applying this data can be more secure. Pravin Albert et al [7] apply Kernel Fuzzy C-Means Clustering (KFCM) algorithm to minimize the major complication. Jia-Yen Hang et al [8] gives a proper methodology to examine the patent qualitatively. Thus, to improve the classification system among several classes and to reduce the complexity. Author gives extension based classification to create a beneficial outlet, and this practice gives outstanding results. Einollah Jafarnejad Ghomi et al. [9]

2. **What are the benefits of Cloud Computing?**

![Benefits of Cloud Computing diagram]

**Figure 2. shows the benefits of Cloud Computing**

2.1. **Speed.** Large quantity data of computing can be resolved in few minutes.

2.2. **Scalability.** Easy to scale up your cloud capacity.

2.3. **Cost.** It eliminates the expense of buying computer hardware and software.

2.4. **Accessibility.** Easy to access the data anywhere.

2.5. **Better Scalability.** With cloud, your data is stored in a centralized secure location.

3. **Issues related with Cloud Computing.**

Issues related with cloud computing can be classified into six major:-
3.1. **Security issues associated with the cloud.** It is difficult to protect organizational cloud data, as they provide various types of data. Facilities such as Network as a service (NaaS), Application as a service (PaaS), Software as a service (PaaS), Application (SaaS) and as a service, Infrastructure (IaaS). Every service has its own protection problems.

3.1.1. **Major security problems of Cloud Computing**

![Figure 3. Issues related with cloud computing](image)

![Figure 4. Types of Security Issues with cloud computing](image)
• **Data Integrity.** Anyone from any place can access those data from the cloud when a data is on a cloud will not distinguish between both sensitive data from a common data, allowing everybody to obtain such sensitive data. Therefore, cloud computing lacks integrity of data.

• **Data Theft.** Instead of purchasing a server, many web hosts try to borrow a server from several other telecom operators but they are also expense and functionally scalable. The consumer is not aware of such things. There is indeed a strong probability that a malicious attacker will intercept the information from external server.

• **Security on Vendor level.** The provider must ensure that with all the foreign threats it may encounter, each server is quite well structured. A cloud is indeed nice unless the consultants the people with better protection.

• **Security on User level.** Although the supplier has provided the participants with a reasonable protection layer. The consumer must ensure there should be no loss of data or manipulation of data for other users that use the same cloud due through their own actions.

• **Information Security.** Safety for the sharing of information among multiple networks and between servers and clients. There are problems related to network security, encryption, and challenge head and collaboration problems.

➢ There are mainly two types of Security issues :-

  a. **Physical Security:** Physical location of data centres ; protection [11] of data centers against disaster and intrusion. Data can be safe from natural disaster by storing it in many different locations and these location can not access openly by anyone.

  b. **Operational Security:** Operational protection (OPSEC), [12] often recognized as procedural privacy, is a step in risk management that encourages administrators to consider activities from an opponent's viewpoint in order to avoid confidential data from mishandling.

3.2. **Data issues associated with the cloud**

Issues related with data in cloud computing depends upon following factors:-

3.2.1. **Data Loss.** losses of data is a very major issue in cloud computing . if the host associates with economic and valid issues then client may suffer from the loss of data then client may suffer from the loss of information. After that the data will permanently not available for client as per restricted it from access.

3.2.2. **Data Location.** If the matter raise for location of information there is no easier way for client to get operate the data. if host does not want to share it with the client .Data can be stored in any corner of world wide instead of their nation.

3.2.3. **Deletion of Data.** A significant argument seems to be that information that the consumer has to remove as he or she no longer wants it or can no long access it for another purpose is therefore removed by the vendor when there are no more copies of data available.

3.2.4. **Restitution of Data.** The organized returning of information to the customer must be assured upon the conclusion of the agreement. For all the user to be capable of taking the required initiatives to maintain the availability or continuous further processing of data after contract termination, this includes enough prolonged periods of note. The manner wherein the information is to be provided to the consumer by the supplier should also be verified.

3.2.5. **Service level agreements.** It is essential to settle on contractual levels of service for accessibility and data recovery, but if appropriate, as per the reason where the information is processed. The provision of defined fines throughout the absence of pre with the agreed levels of service is protected.
3.3. Performance Issues related to the Cloud Computing.

For [13] expense use of computer cloud computing, service vendors Sharing of information amongst consumers and therefore other big one. The effect of virtual machines of the device and server is of significance. Infrastructure on efficiency of system. Internet companies for the internet House data centers across the globe (or perhaps in remote locations, Places) and provide product to end-users who may be Around the globe scattered. The key objective of the Cloud Storage service Service provider is responsible for hiding the participant’s channel and supplying them with the illusion of infinite bandwidth and zero delay. One strategy is to deploy satellite data centers in addition to the traditional data centers. An example of this is Amazon’s Cloud Front edge network deployment which consists of numerous satellite data centers.

3.3.1. Latency. A few of the significant network measurements Performance is latency (the delay in time between both the latter Knowledge that leaves the cognitive aspects and enters the database Consumers designed). This latency is especially important for Audio, video and other time-critical multimedia material Data, including such quotations from stocks. Problems with latency will degrade The productivity of many data-intensive apps, such as Telepresence, study of big data, statistical computing, etc.

3.3.2. Measurements. It is certainly never realistic for one to be able to Measure this latency physically between a Singapore server And a customer in Omaha, NE, for instance. In addition, even If such a calculation has been made, it is bound to adjust. Owing to the intrinsic existence of traffic routing, over time About the Internet. Hence, providing a stable, cost-effective approach to The latency calculation for any combination/location of In the cloud context, servers/consumers are advantageous. Yeah. Computing. Several scholars are researching and investigating Evaluating the effect of virtualization technology on machines Efficiency, that will result in new latency techniques Estimations of bandwidth.

3.4. Energy Issues related with Cloud Computing. As a rising number of companies and individuals move their workloads to cloud service providers, cloud computing is increasingly growing in importance. On thousands of servers spread over several geographically dispersed data centers, services provided by cloud providers such as Amazon, Microsoft, IBM, and Google are deployed.

The price of power required in running a massive cloud system of several data centers can also be immense. In reality, cloud providers also have to charge for and use the power output they draw. One of the problems facing cloud provider is to reduce such high capital costs.

Moreover, High power consumption by the infrastructure leads to substantial carbon dioxide (CO₂) emissions contributing to the greenhouse effect.
3.5. **Bandwidth Issues related with Cloud Computing.** In relation to the cloud, the greatest bandwidth obstacle is that businesses appear to ignore or fail to recognize it. Your bandwidth can help your current activities, but while you are on the cloud, you should consider whether or not it can support operations. In several ways, cloud computing can change how your company works, forcing you to rely more than you have in the past on the internet and connectivity.

One instance is a call from Social media or Skype. How several instances have you tried to communicate through these media and encountered interruptions, such as broken audio or delayed video, with co-workers, partners, customers or vendors? Or maybe to complete some information, you need to access a big file, but your machine tells you it'll take 2 hours to download. The problem isn’t your device, it’s your bandwidth. These interruptions can significantly affect your productivity, your communication and overall company efficiencies. This is why bandwidth is an important consideration.

3.6. **Fault Tolerance Issue related with Cloud Computing.** One of the main challenges of cloud computing is fault tolerance. Fault tolerance is related to all the techniques required to allow software faults to be accepted by a system. Through machine operations, these software errors can or may not show itself, however if they do, machines accept data loss. Methodologies should provide the computer system's required functionality to avoid process failed to protect equipment failure instances.

4. **Solution of problems solve by Cloud Computing.**

4.1. **Flexibility in operations.** Many[14] small and medium-sized businesses usually work to save costs with varying frequencies. This could be hard to manage, as waffling staircase and scaledowns can discourage output and productivity. By embracing cloud technology, organizations also will gain maximum operational flexibility, which often reduces cost, and also optimizes efficiency and performance.

4.2. **Reduction in Cost.** There are cloud-based support services on a subscription basis, which is ideal for companies with limited capital to spend in advance. The organized configuration and served up of the suppliers would help small firms save significantly on networking equipment and enable the working capital to be used by core professional services.

4.3. **Increase in Transparency.** Cloud service vendors integrate emerging technology into different services, like telecommunications and applications. The software are constantly updated with the most innovative features that can maximize output and optimize productivity. Users will immediately access technique applied and the daily developments, which they can use to deliver slicing solutions with their own consumers.
Often minimized is the uncertainty of conflicting file types, titles, and content. Furthermore all data and recovery files

4.4. **Improved Security.** There has been a misunderstanding[15] that even by keeping confidential data in the cloud rather than in-house servers, this will become more vulnerable to hackers. Consequently, perception of security risks is one of the main reasons where organizations also declined to adopt Cloud Computing. Even so, significant attempts were made to push its protection to early stages with the massive popularity of cloud hosting.

Over the years, several security changes have been implemented to enhance the overall safety of cloud information. These comprehensive security enhancements built using innovative tech have rendered Public Cloud more reliable and effective than the conventional on-premise solutions. Research conducted by organizations focused on cloud computing has also shown that they find it more efficient than their prior existing systems.

While cloud computing is progressively accessible, this also allows to earn profits for enterprises. The advantage of high power consumption on demand will financial assistance. Also it tackles the question of connectivity and affordability for specific customers, and also for small and medium-sized businesses across the country, with prospect of access care from everywhere and at any time.

5. **Conclusion.**

Cloud Computing is a trending and future leading technology to provide IT benefits as computing methodologies. Clouds are form to give facilities to consumers for abroad. Vendors must have to share information their clients. This papers gives the immense review of Cloud Computing with their need in modern world and how it is useful for future generation models of cloud computing, latest issues occurred in cloud computing with their solutions.

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