

# A Survey - Cloud Computing

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**Abstract:** Now a day cloud computing plays an important role in internet era due to the a successive mobile applications cloud computing becomes more important it is the ultimate solutions for this mobile application cloud computing opens a new era for computing technology presently there are various web services through the different clouds some notable services are, Amazon web services, elastic compute cloud, Google cloud (dope box). The cloud computing offers huge opportunities of various web services to the internet users and mobile users; though there are many issues still to be covered in this paper represent survey of various cloud computing models.

**Keywords:** Cloud Computing, Cloud Service models, Cloud Deployment models.

## 1. INTRODUCTION

The idea of providing a centralized computing service dates back to the 1960s, when computing services were provided over a network using mainframe time-sharing technology. In 1966, describes the idea of computing as a public utility with a centralized computing facility to which many remote users connect over networks. In the 1960s, the mainframe time-sharing mechanism effectively utilized computing resources, and provided acceptable performance to users; however, mainframes were difficult to scale and provision up-front because of increasingly high hardware costs. Accordingly, users didn't have full control over the performance of mainframe applications because it depended on how many users utilized the mainframe at a given moment. As such, with the introduction of personal computers users loved the idea of having full control of their computing resources, even though these resources are not as effectively utilized. With the change in the semiconductor industry, personal computers became affordable, and business abandoned mainframes. A new challenge was then introduced: how to share the data. Client-server systems were supposed to address this data-sharing challenge by providing centralized data management and processing servers. As business computing needs grew and the Internet became widely adopted, the initially simple client-server architecture transformed into more complex two-tier, three-tier, and four-tier architectures.

As a result, the complexity and management costs of IT infrastructure have skyrocketed – even the costs of actual software development in large organizations are typically lower than costs of software and infrastructure maintenance. For many enterprises, the long-standing dream has been to background information technology issues and concentrate on core business instead. Although the effect of the cloud computing adoption is yet to be seen, many companies believe that cloud computing may offer feasible alternative model that may reduce costs and complexity while increasing operational efficiency. There are countless definitions and interpretations of cloud computing to be found from multiple sources.

The term “cloud computing” itself likely comes from network diagrams in which cloud shape are used to describe certain types of networks, either the Internet or internal networks. Some sources refer to cloud computing as a set of applications delivered as services combined with the datacenter hardware and software that enables the applications. Others say that cloud computing is a business model rather than a specific technology or service.

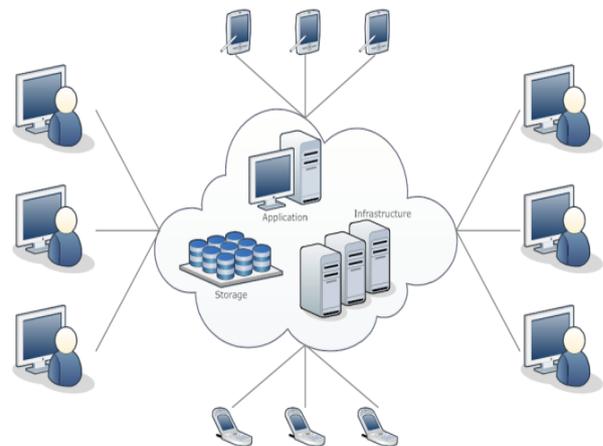


Fig. 1: Network of Cloud Computing

Cloud computing refers to the use of computing resources, those being hardware and/or software that reside on a remote machine and are delivered to the end user as a service over a network, with the most prevalent example being the internet. By definition, a user entrusts his data to a remote service, on which has limited to no influence. When it first appeared as a term and a concept, a lot of critics dismissed it as being the latest tech fad.

However, cloud computing managed to cut through the hype and truly shift the paradigm of how IT is done nowadays. The Cloud has achieved cutting costs for enterprises and helping users focus on their core business instead of being obstructed by IT issues. For this reason, it seems that it is here to stay for the immediate future.

## 2. SERVICE MODELS

There are mainly four models of cloud computing:

- Infrastructure as a Service (IaaS)
- Platform as a Service (PaaS)
- Software as a Service (SaaS)
- Network as a Service (Naas)

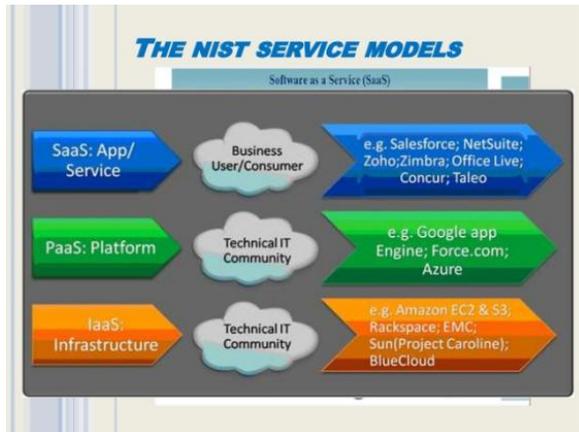


Fig. 2: The Nist Service Models.

Let's discuss those in more detail.

**Infrastructure as a Service (IaaS):** This is the most basic cloud-service model, which provides the user with virtual infrastructure [1]. For example servers and data storage space. Virtualization plays a major role in this mode, by allowing IaaS-cloud providers to supply resources on-demand extracting them from their large pools installed in data centers.

**Platform as a Service (PaaS):** In this model, cloud providers deliver to the user development environment services where the user can develop and run in-house built applications. The services might include an operating system, a programming language execution environment, databases and web servers [1, 3].

**Software as a Service (SaaS):** In this model, the cloud provides the user with access to already developer applications that are running in the cloud. The access is achieved by cloud clients and the cloud users do not manage the infrastructure where the application resides, eliminating with this the way the need to install and run the application on the cloud user's own computers[5].

**Network as a Service (Naas):** The least common model, where the user is provided with network connectivity services, such as VPN and bandwidth on demand. Cloud computing offers numerous advantages both to end users and businesses of all sizes. The obvious huge advantage is that you no more have to support the infrastructure or have the knowledge necessary to develop and maintain the infrastructure, development environment or application, as were things up until recently. The burden has been lifted and someone else is taking care of all that. Business are now able to focus on their core business by outsourcing all the hassle of IT infrastructure.

## 3. CLOUD DEPLOYMENT MODELS

In this paper explain the four different types of cloud deployment models.

- Public Cloud
- Private Cloud
- Community Cloud
- Hybrid Cloud

Discuss cloud deployment model in detail.

**Public Cloud:** Public cloud is publically available in cloud computing. The computing is shared between any user. Many popular services are Amazon web services, elastic compute cloud, google cloud (dop box)[8,9].



Fig. 3: Public Cloud

**Private Cloud:** Public cloud is own model. Private cloud could not share with other group. It is valuable and secure than public clouds[10].

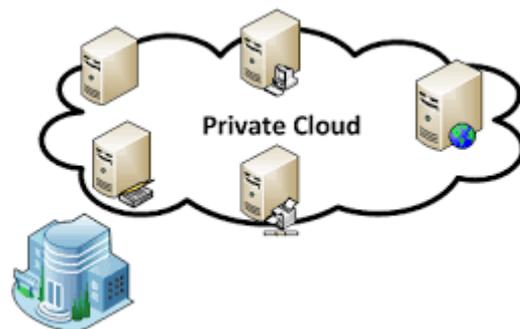


Fig. 4 : Private Cloud

**Community Cloud:** Community cloud involves sharing of computing base in between group of the same community and manage by a third party[9,10].



Fig. 5: Community Cloud

**Hybrid Cloud:** Hybrid cloud is a combination of public, private and community cloud. And it's a unique entity. The is to combine services and data from variety cloud models to create s well-managed computing environment [8,11].



Fig. 6: Hybrid Cloud

**Cost Efficiency:** This is the biggest advantage of cloud computing, achieved by the elimination of the investment in stand-alone software or servers. By leveraging cloud's capabilities, companies can save on licensing fees and at the same time eliminate overhead charges such as the cost of data storage, software updates, management etc. The cloud is in general available at much cheaper rates than traditional approaches and can significantly lower the overall IT expenses. At the same time, convenient and scalable charging models have emerged (such as one-time-payment and pay-as-you-go), making the cloud even more attractive. If you want to get more technical and analytical, cloud computing delivers a better cash flow by eliminating the capital expense (CAPEX) associated with developing and maintaining the server infrastructure.

**Convenience and continuous availability:** Public clouds offer services that are available wherever the end user might be located. This approach enables easy access to information and accommodates the needs of users in different time zones and geographic locations. As a side benefit, collaboration booms since it is now easier than ever to access, view and modify shared documents and files. Moreover, service uptime is in most cases guaranteed, providing in that way continuous availability of resources. The various cloud vendors typically use multiple servers for maximum redundancy. In case of system failure, alternative instances are automatically spawned on other machines.

**Backup and Recovery:** The process of backing up and recovering data is simplified since those now reside on the cloud and not on a physical device. The various cloud providers offer reliable and flexible backup/recovery solutions. In some cases, the cloud itself is used solely as a backup repository of the data located in local computers.

**Cloud is environment friendly:** The cloud is in general more efficient than the typical IT infrastructure and it takes fewer resources to compute, thus saving energy. For example, when servers are not used, the infrastructure normally scales down, freeing up resources and consuming less power. At any moment, only the resources that are truly needed are consumed by the system.

**Resiliency and Redundancy:** A cloud deployment is usually built on a robust architecture thus providing resiliency and redundancy to its users. The cloud offers automatic failover between hardware platforms out of the box, while disaster recovery services are also often included.

**Scalability and Performance:** Scalability is a built-in feature for cloud deployments. Cloud instances are deployed automatically only when needed and as a result, you pay only for the applications and data storage you need. Hand in hand, also comes elasticity, since clouds can be scaled to meet your changing IT system demands. Regarding performance, the systems utilize distributed architectures which offer excellent speed of computations. Again, it is the provider's responsibility to ensure that your services run on cutting edge machinery. Instances can be added instantly for improved performance and customers have access to the total resources of the cloud's core hardware via their dashboards.

**Quick deployment and ease of integration:** cloud system can be up and running in a very short period, making quick deployment a key benefit. On the same aspect, the introduction of a new user in the system happens instantaneously, eliminating waiting periods. Furthermore, software integration occurs automatically and organically in cloud installations. A business is allowed to choose the services and applications that best suit their preferences, while there is minimum effort in customizing and integrating those applications.

**Increased Storage Capacity:** The cloud can accommodate and store much more data compared to a personal computer and in a way offers almost unlimited storage capacity. It eliminates worries about running out of storage space and at the same time It spares businesses the need to upgrade their computer hardware, further reducing the overall IT cost.

**Device Diversity and Location Independence:** Cloud computing services can be accessed via a plethora of electronic devices that are able to have access to the internet. These devices include not only the traditional PCs, but also Smartphone's, tablets etc. With the cloud, the "Bring your own device" (BYOD) policy can be easily adopted; permitting employees to bring personally owned mobile devices to their workplace. An end-user might decide not only which device to use, but also where to access the service from. There is no limitation of place and medium. We can access our applications and data anywhere in the world, making this method very attractive to people. Cloud computing is in that way especially appealing to international companies as it offers the flexibility for its employees to access company files wherever they are.

**Smaller learning curve:** Cloud applications usually entail smaller learning curves since people are quietly used to them. Users find it easier to adopt them and come up to speed much faster. Main examples of this are applications like Gmail and Google Docs. As made clear from the

above, cloud computing is a tool that offers enormous benefits to its adopters. However, being a tool, it also comes with its set of problems and inefficiencies. Let's address the most significant ones.

**Security and privacy in the Cloud:** Security is the biggest concern when it comes to cloud computing. By leveraging a remote cloud based infrastructure, a company essentially gives away private data and information, things that might be sensitive and confidential. It is then up to the cloud service provider to manage, protect and retain them, thus the provider's reliability is very critical. A company's existence might be put in jeopardy, so all possible alternatives should be explored before a decision. On the same note, even end users might feel uncomfortable surrendering their data to a third party. Similarly, privacy in the cloud is another huge issue. Companies and users have to trust their cloud service vendors that they will protect their data from unauthorized users. The various stories of data loss and password leakage in the media does not help to reassure some of the most concerned users.

**Dependency and vendor lock-in:** One of the major disadvantages of cloud computing is the implicit dependency on the provider. This is what the industry calls "vendor lock-in" since it is difficult, and sometimes impossible, to migrate from a provider once you have rolled with him. If a user wishes to switch to some other provider, then it can be really painful and cumbersome to transfer huge data from the old provider to the new one. This is another reason why you should carefully and thoroughly contemplate all options when picking a vendor.

**Technical Difficulties and Downtime:** Certainly the smaller business will enjoy not having to deal with the daily technical issues and will prefer handing those to an established IT company, however you should keep in mind that all systems might face dysfunctions from time to time. Outage and downtime is possible even to the best cloud service providers, as the past has shown. Additionally, you should remember that the whole setup is dependent on internet access, thus any network or connectivity problems will render the setup useless. As a minor detail, also keep in mind that it might take several minutes for the cloud to detect a server fault and launch a new instance from an image snapshot.

**Limited control and flexibility:** Since the applications and services run on remote, third party virtual environments, companies and users have limited control over the function and execution of the hardware and software. Moreover, since remote software is being used, it usually lacks the features of an application running locally.

**Increased Vulnerability:** Related to the security and privacy mentioned before, note that cloud based solutions are exposed on the public internet and are thus a more vulnerable target for malicious users and hackers. Nothing on the Internet is completely secure and even the biggest players suffer from serious attacks and security breaches.

Due to the interdependency of the system, If there is a compromise one of the machines that data is stored, there might be a leakage of personal information to the world.

#### 4. CONCLUSION

Cloud computing is a new paradigm of computing utilities that promises to provide more flexibility, less expensive, and more efficiency in IT services to end users. Firstly this paper presents an introduction to cloud computing and discuss about on the different types of service models such (IaaS, PaaS, SaaS, NaaS) and Cloud Deployment Models.

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