

A Seminar Report

On

“Cloud Computing”

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CERTIFICATE

This is to certify that **Miss. Pooja PankajKumar Tailor**, Exam No. **267** students of **B.C.A. 6th semester** of our college have successfully prepared and submitted Seminar Report on “**Cloud Computing**” as a partial fulfilment for the course of **Bachelor of Computer Application** during the academic year **2018-2019**.

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Abstract

Computers have become an integral element of everyday life. Computers are required in almost every sector, including employment, research, and education. As the usage of computers in our daily lives grows, so does the amount of computing resources we require. Harnessing resources as and when needed is not an issue for companies like Google and Microsoft. When it comes to smaller businesses, though, cost is a major consideration. Machine failure, hard drive failures, software flaws, and other issues arise as a result of the massive infrastructure. For such a group, this might be a major issue. This problem has a remedy in the form of cloud computing.

Cloud computing is a paradigm shift in which computing is shifted away from personal computers and even individual business application servers to a network of computers known as a "cloud." A cloud is a virtualized server pool that may supply customers with a variety of computer resources. Users of this system just have to worry about the computing service they've requested. The user is not given access to the underlying mechanics of how it is accomplished. Data and services are stored in massively scalable data centres and may be accessed from any connected device anywhere on the planet.

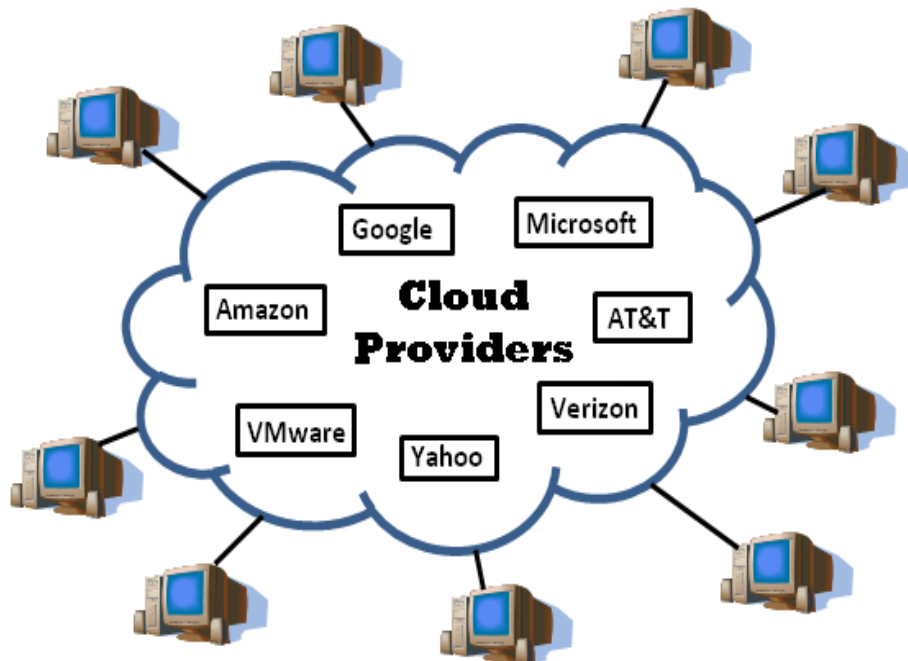
Any activity involving the use and/or development of computer hardware and software is referred to as computing. Everything in the bottom layer is included in this layer, from basic computational power to storage capacities. Cloud computing connects all of these elements and provides them as a single, unified entity with its own sophisticated administration.

The phrase "cloud" is a metaphor for wide-area networks (such as the internet) or any other big networked system. It was inspired in part by the cloud-like symbol used in schematic diagrams to depict the complexity of the networks. It symbolises the network's complexity, which might comprise everything from cables to routers to servers to data centres and other devices.

Introduction

Picture a scenario where users of today's internet computers don't have to run, install, or save their applications or data on their own computers; imagine a world where all of your data and information is stored in the cloud (Internet).

Cloud computing, like the electrical grid, is Internet-based computing in which pooled resources, software, and information are made available on demand to computers and other devices.



"The cloud" is a well-worn metaphor for the Internet, but when coupled with "computer," the meaning expands and blurs. Cloud computing is defined by some analysts and vendors as a modernised form of utility computing: essentially virtual servers accessible over the Internet. Others take it a step further, claiming that whatever you consume outside of your firewall is "in the cloud," even traditional outsourcing.

When you consider what we constantly need: a method to boost capacity or add features on the fly without investing in new equipment, training new staff, or licencing new software, cloud computing comes into focus. Cloud computing is a subscription-based or pay-per-use service that expands ICT's current capabilities in real time through the Internet.

Cloud computing is still in its infancy, with a ragtag group of big and small companies offering anything from full-fledged apps to storage and spam filtering. Currently, IT must connect to cloud-based services one at a time, but cloud computing aggregators and integrators are on the rise.

Cloud Computing

- **What is cloud computing?**

Cloud computing is Internet-based computing in which users pay for software, infrastructure, platform, devices, and other resources and hosting on a pay-as-you-go basis from virtual shared servers.

In the cloud computing concept, all of the information that a digitalized system has to provide is supplied as a service. Users can use these services on the "Internet cloud" without any prior knowledge of how to manage the resources involved.

Cloud computing may be defined as an emerging computer paradigm in which data and services live in massively scalable data centres that can be accessed through the Internet by any connected device.

Cloud computing is a method of offering a variety of services using virtual computers that are deployed on top of a huge physical machine pool in the cloud. Only when we consider what IT has always desired—a method to boost capacity or add various capabilities to the present setup on the fly without investing in new equipment, training new employees, or licencing new software—does cloud computing come into focus. In the current scenario, the buzzwords are "on the go" and "without investment or training." However, cloud computing is a superior option.

One of the basic ideas of cloud computing is that processing 1000 times the data does not have to be 1000 times more difficult. As the volume of data grows, cloud computing services may be utilised to efficiently manage the load and make processing jobs easier. Hardware was a commodity in the age of business servers and personal computers, since the key criterion for processing capabilities was the server's hardware configuration. However, with the introduction of cloud computing, the commodity has shifted to cycles and bytes. Customers are compensated based on the number of execution cycles completed or the amount of data delivered. The user is not aware of the hardware or computers on which the apps operate. Management is responsible for the quantity of computing hardware required, and the customer is paid according on how the programme utilises these resources.

History



Salesforce.com is a provider of **Customer Relationship Management (CRM)** software that it sells to businesses as a service via the internet.

Origins

Marc Benioff, a former Oracle employee, created Salesforce.com in 1999. The firm went public on the New York Ticker Exchange in June 2004 with the stock symbol CRM. Marc Benioff, Larry Ellison, Halsey Minor, Magdalena Yesil, and Igor Sill of Geneva Venture Partners were among the first investors in salesforce.com.

Current Status

Salesforce.com has regional headquarters in Dublin, Singapore, and Tokyo, as well as its headquarters in San Francisco, California. Toronto, New York, London, Sydney, and San Mateo, California are among the company's other significant offices. Salesforce.com's services are available in 15 languages, and the company presently has 43,600 clients and more than 1,000,000 subscribers. Salesforce.com was placed 43rd on the list of the world's largest software firms in 2008.

Following the federal takeover of Freddie Mac and Fannie Mae in September 2008, the S&P 500 dropped the two mortgage giants from the index after Wednesday, September 10, 2008, and added Fastenal and Salesforce.com after Friday, September 12, 2008.

Amazon Web Service



Amazon Elastic Compute Cloud (commonly known as "EC2") is a commercial online service that lets consumers rent machines to execute their own computer programmes. EC2 enables scalable application deployment by offering a web services interface via which a customer may construct virtual machines, or server instances, on which he can install any programme. The word "elastic" refers to the ability of a client to build, launch, and terminate server instances as needed, with active servers being charged by the hour. For most failure causes, a customer can establish up server instances in zones distant from each other so that one can act as a backup for the other and reduce downtime. Amazon.com provides EC2 as one of several web services marketed under the blanket term Amazon Web Services (AWS).

History

On August 25, 2006, Amazon launched a restricted public beta of EC2. EC2 was made available on a first-come, first-served basis. On October 23, 2008, EC2 was made generally accessible, along with support for Microsoft Windows Server.

Virtual Machines

Xen virtualization is used by EC2. Each virtual machine, referred to as a "instance," serves as a virtual private server in one of three sizes: small, medium, or big. Amazon.com uses "EC2 Compute Units" to size instances, which are the equivalent CPU capacity of real hardware. One EC2 Compute Unit is equal to a 2007 Opteron or Xeon processor running at 1.0-1.2 GHz. The following instance kinds are available in the system:

Small Instance

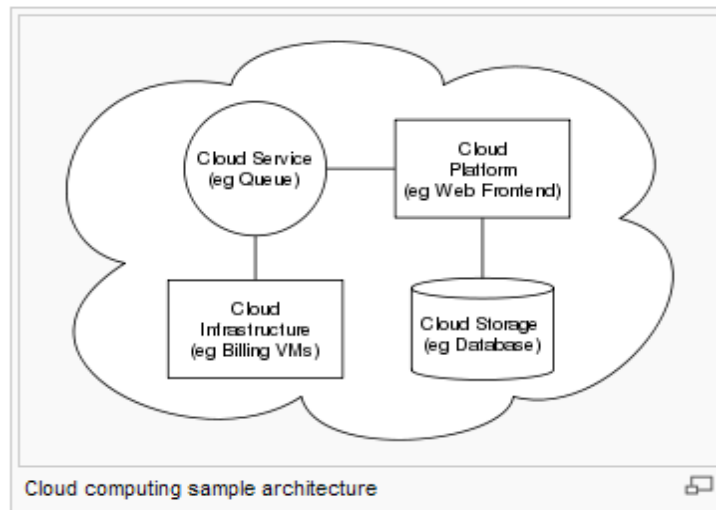
"A system with 1.7 GB of RAM, 1 EC2 Compute Unit, 160 GB of instance storage, 32-bit platform," says the tiny instance.

Large Instance

The large instance represents "a system with 7.5 GB of memory, 4 EC2 Compute Units, 850 GB of instance storage, 64-bit platform"

Architecture

Multiple cloud components communicate with each other through application programming interfaces, generally web services, in cloud architecture, which is the systems architecture of the software systems involved in the delivery of cloud computing.



Cloud Computing sample Architecture

Cloud architecture, the software system architecture involved in the provision of cloud computing, includes hardware and software created by a cloud architect who usually works for a cloud builder. In general, it includes several cloud components, generally online services that communicate with one another via application programming interfaces.

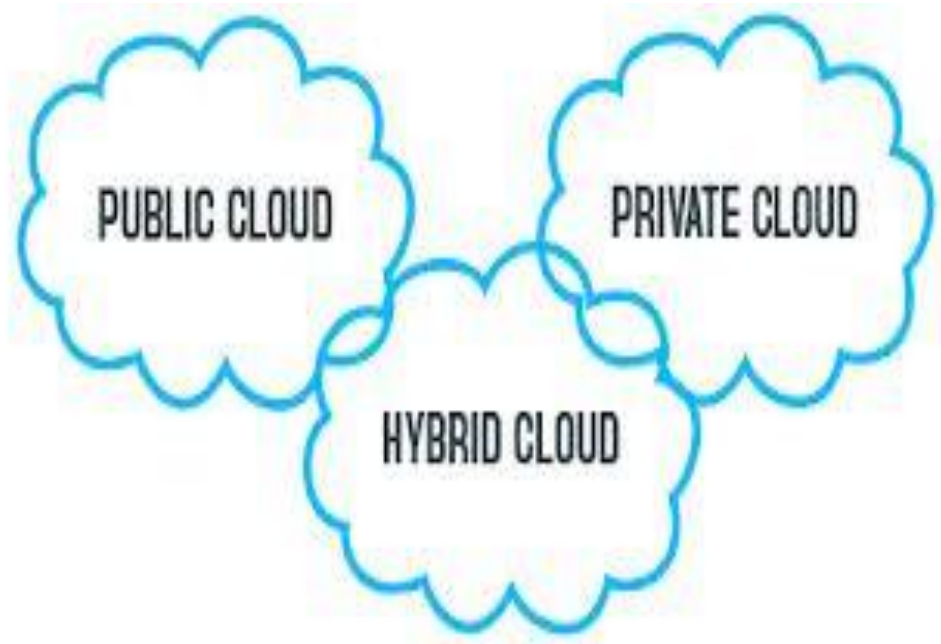
That is like the UNIX idea that several programmes work together through universal interfaces and perform one thing. The complexity of the systems is managed and they are controllable better than their monolithic equivalents.

The front and back end are recognised as the two main components of cloud computing. The end of the front is the client, that is to say the user of the computer. This comprises the network of the Client and apps for accessing the cloud through a user interface like a web browser.

The 'cloud' itself, which comprises a wide range of computers, servers and data storage devices, is behind the cloud architecture.

Types of cloud computing

There are three types of cloud computing. And this figure is as following:



Public Cloud



Private Cloud



Hybrid Cloud

Public Cloud:-



- A service provider hosting the cloud infrastructure provides public clouds to the broader public. Public cloud companies such as Amazon AWS, Microsoft and Google generally own the infrastructure and provide internet connectivity. This approach does not allow consumers to see or monitor the location of the infrastructure. Note that all public-cloud clients use the same infrastructure pool with restricted configuration, security safeguards, and variations in availability.
- Cloud infrastructure that is accessible to any subscriber, managed by third parties and provides various cloud applications, minimise customer risks and costs by extending the company infrastructure on a temporary basis. Compared to the investment needs often associated with the other deployment choices, the cloud infrastructure is commercially offered to the public via a cloud service in the cloud with very little financial effort.

Private Cloud:-



- Private cloud is a specific organization-specific cloud infrastructure. Private clouds allow companies to host cloud applications, while resolving data security and control issues that in the public cloud environment are typically absent. It is not shared with others, whether domestically or through a third party, and can be hosted inside or outside.
- Maintained and managed cloud infrastructure for a certain customer. Access to, in-house or by third parties on the premises may be limited to that client with the highest control over the data, safety, service quality, and operation.

Hybrid cloud:-

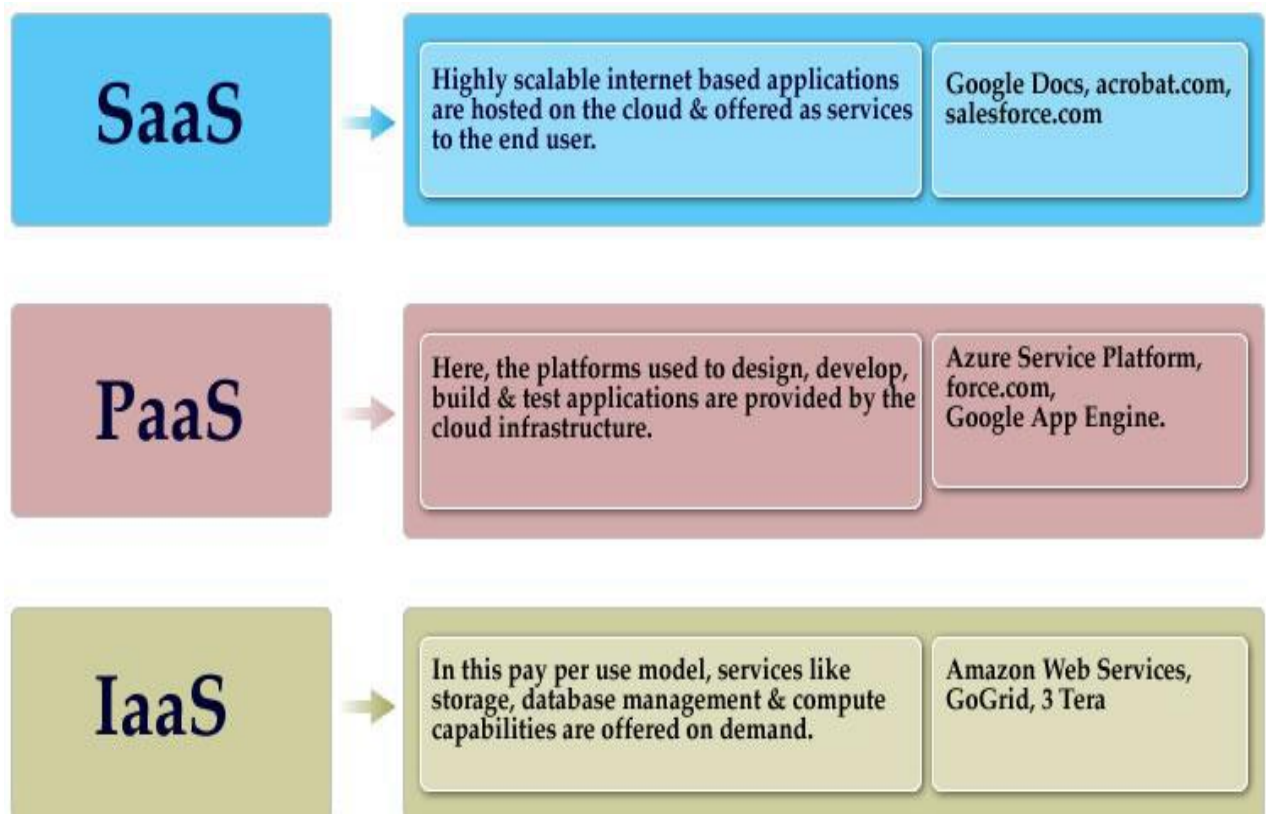


- Hybrid clouds include two or more clouds (private, communal or public) which stay uniquely linked but with the benefits of several deployment strategies. You may take full or partial use of third-party cloud providers in a hybrid cloud, which increases computing flexibility. Increasing the capacities of a public cloud in a typical private cloud can help handle any unexpected volumes.
- Combining public and private cloud models to enable data to move from cloud to cloud, and used to maintain service standards, given the fluctuations in workloads, with leverage cloud solutions for certain tasks that are expensive to maintain under conditions such as back-up and test/development environments. A multitude of clouds of all kinds comprise the cloud infrastructure. This can be a combination of public and private clouds that satisfy the need to keep some data in an organisation and also to offer cloud services.

Components of cloud computing

Cloud providers offer services that can be grouped into three categories:

- 1. Software as a Service (SaaS)**
- 2. Platform as a Service (PaaS)**
- 3. Infrastructure as a Service (IaaS)**



1. Software as a Service (SaaS):-

The consumer is provided a complete request as a service upon request under this approach. On the cloud, a single instance of the service is provided and many end-users. Customers do not need to invest in servers or software licencing in the first stage, but the expenses for the provider are reduced, because just an application has to be hosted and maintained. I've offered SaaS today by Google, Salesforce, Microsoft, Zoho, etc.

2. Platform as a Service (PaaS):-

A software or development environment in which additional higher service tiers can be created is encapsulated and supplied here. The consumer is allowed to create his own apps that operate on the infrastructure of the provider. PaaS companies offer a preset mix of OS and application servers, such as LAMP (Linux, Apache, MySQL and PHP), limited J2EE, Ruby etc. to fulfil applications' Manageability and Scalability needs. Some notable PaaS examples include Google's App Engine, Force.com etc.

3. Infrastructure as a Service (IaaS):-

As standardised network services IaaS offers basic storage and computation capabilities. The working loads are handled by a group of servers, storage systems, networking equipment, data-center space, etc. In general, the customer would implement his own infrastructure software. Amazon, GoGrid, 3 Tera, etc. are some typical instances.

Recent development of cloud computing

- ❖ The large-scale cloud research initiative started in 2007 by Google, IBM, and other institutions. Eucalyptus was the first AWS API compatible open source technology to create private clouds in the beginning of 2008.



Google and IBM have developed a major distributed computing project by supplying colleges with hardware, software and services. They aimed to equip students to make use of the potential of contemporary computer systems, providing universities with hardware, software and services for further education in the distributed computing industry. The two businesses want to lower the cost of distributed computer research so that academic institutions and their students may contribute more readily to this new computer paradigm. Head of Google, Eric Schmidt, stated in an explanation. It is important that students are properly prepared to exploit the capabilities of contemporary computer systems and for research to create ways of tackling new issues to be used most efficiently in the long-term interests of our consumers."

The University of Washington is the first university to take part in the programme. The programme is also attended by Carnegie-Mellon University, MIT, Stanford University, Berkeley University of California and Maryland University.

A massively parallel computing curriculum created with Google and the University of Washington will be available for students working with this cluster.

Advantages of cloud computing

1. Flexibility:-

There is a high rate of flexibility.

2. Low Cost:-

Companies can save big by employing cloud computing as it eliminates cost for hardware and software.

3. Speed & Scales:-

Traditional methods to buy and configure hardware and software are time consuming.

4. Easier Management of data and Information:-

Since all data are located on a centralized location, data are more organized making it easy to manage.

5. Device Diversity:-

We can access our applications and data anywhere in the world, on any system.

6. Increased Storage Capacity:-

Increased Storage Capacity is another benefit of the cloud computing, as it can store more data as compared to a personal computer.

7. Easy to Learn and Understand:-

Since people are quite used to cloud applications like Gmail, Google Docs, so anything related to the same is most likely to be understood by the users.

8. Automatic Updating:-

It saves companies time and effort to update multiple servers.

9. Customize Setting:-

Cloud computing also allows you to customize your business applications.

Disadvantages of cloud computing

1. Dependency:-

One major disadvantages of cloud computing is user's dependency on the provider.

2. Risk:-

Cloud computing services means taking services from remote servers.

3. Requires a Constant internet connection:-

The most obvious disadvantages is that Cloud computing completely relies on network connections.

4. Security:-

Security and privacy are the biggest concerns about cloud computing.

5. Migration Issue:-

Migration problem is also a big concern about cloud computing.

Conclusion

- ❖ So, while cloud computing truly is fantastic and you're probably currently utilising it, here's what we found from looking at the pro and the cons:
- ❖ Cloud computing is a very affordable method for businesses to have all of the resources they need once.
- ❖ THEY is a much better way of distributing your resources and accessing things from longer distances becomes easier.
- ❖ Cloud computing is a powerful new abstraction of scalable, dependable and accessible large-scale data processing systems. There are huge, autonomously handled server pools in cloud computing that decrease the overhead and alleviate headaches in management. It is also a new architecture that needs to grow the Internet into a future computer platform.