

Module -1 (Fundamentals)

1.What is cloud computing?

Cloud computing is the on-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user. Large clouds often have functions distributed over multiple locations, each location being a data center.

2. Describe cloud computing deploy model

The cloud deployment model identifies the specific type of cloud environment based on ownership, scale, and access, as well as the cloud's nature and purpose.

There are four types of cloud deployment model

1. Public cloud
2. Private cloud
3. Hybrid cloud
4. Community cloud

1. Public cloud

The Public Cloud allows systems and services to be easily accessible to the general public. Public cloud may be less secure because of its openness, e.g., e-mail, Google App Engine.

2. Private Cloud

The Private Cloud allows systems and services to be accessible within an organization. It offers increased security because of its private nature.

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3.Community Cloud

The Community Cloud allows systems and services to be accessible by group of organizations.

4.Hybrid Cloud

The Hybrid Cloud is mixture of public and private cloud. However, the critical activities are performed using private cloud while the non-critical activities are performed using public cloud

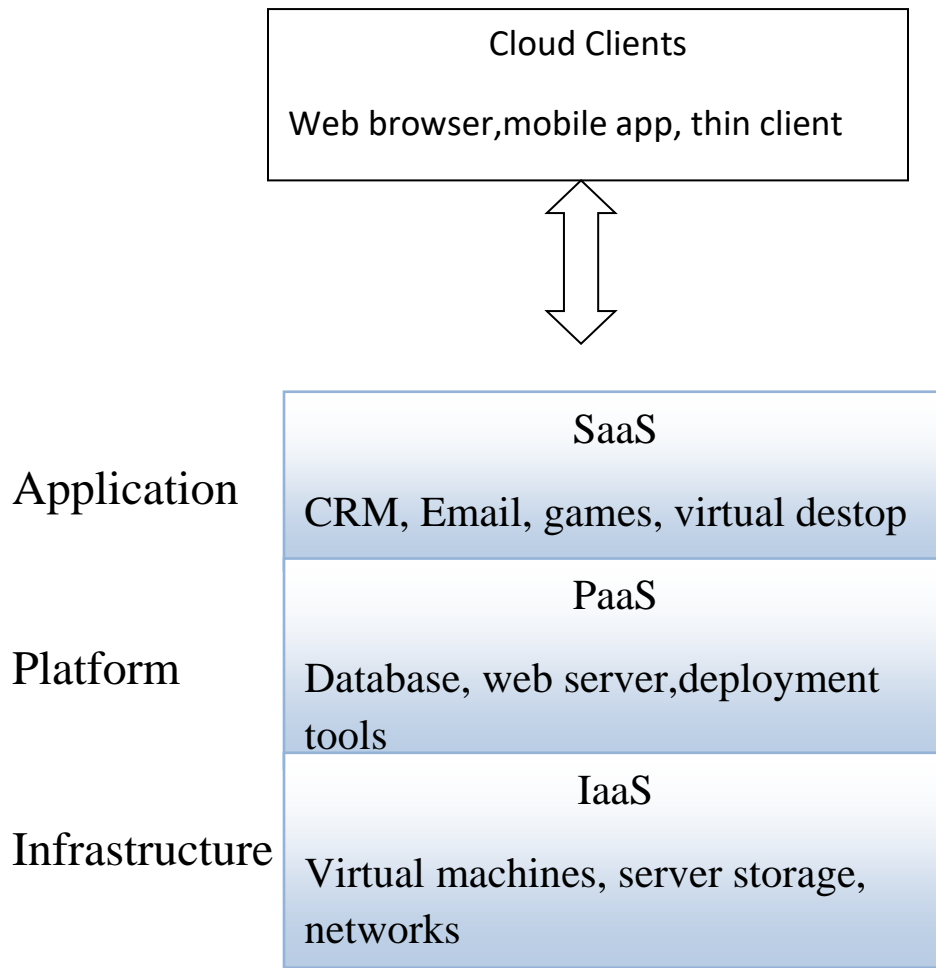
3. Describe different type of cloud service

There are three types of cloud service.

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

There are many other service models all of which can take the form like XaaS, i.e., Anything as a Service. This can be Network as a Service, Business as a Service, Identity as a Service, Database as a Service or Strategy as a Service. The Infrastructure as a Service (IaaS) is the most basic level of service. Each of the service models make use of the underlying service model, i.e., each inherits the security and management mechanism from the underlying model, as shown in the following diagram:

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INFRASTRUCTURE AS A SERVICE (IAAS)

IaaS provides access to fundamental resources such as physical machines, virtual machines, virtual storage, etc.

PLATFORM AS A SERVICE (PAAS)

PaaS provides the runtime environment for applications, development & deployment tools, etc.

SOFTWARE AS A SERVICE (SAAS)

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SaaS model allows to use software applications as a service to end users.

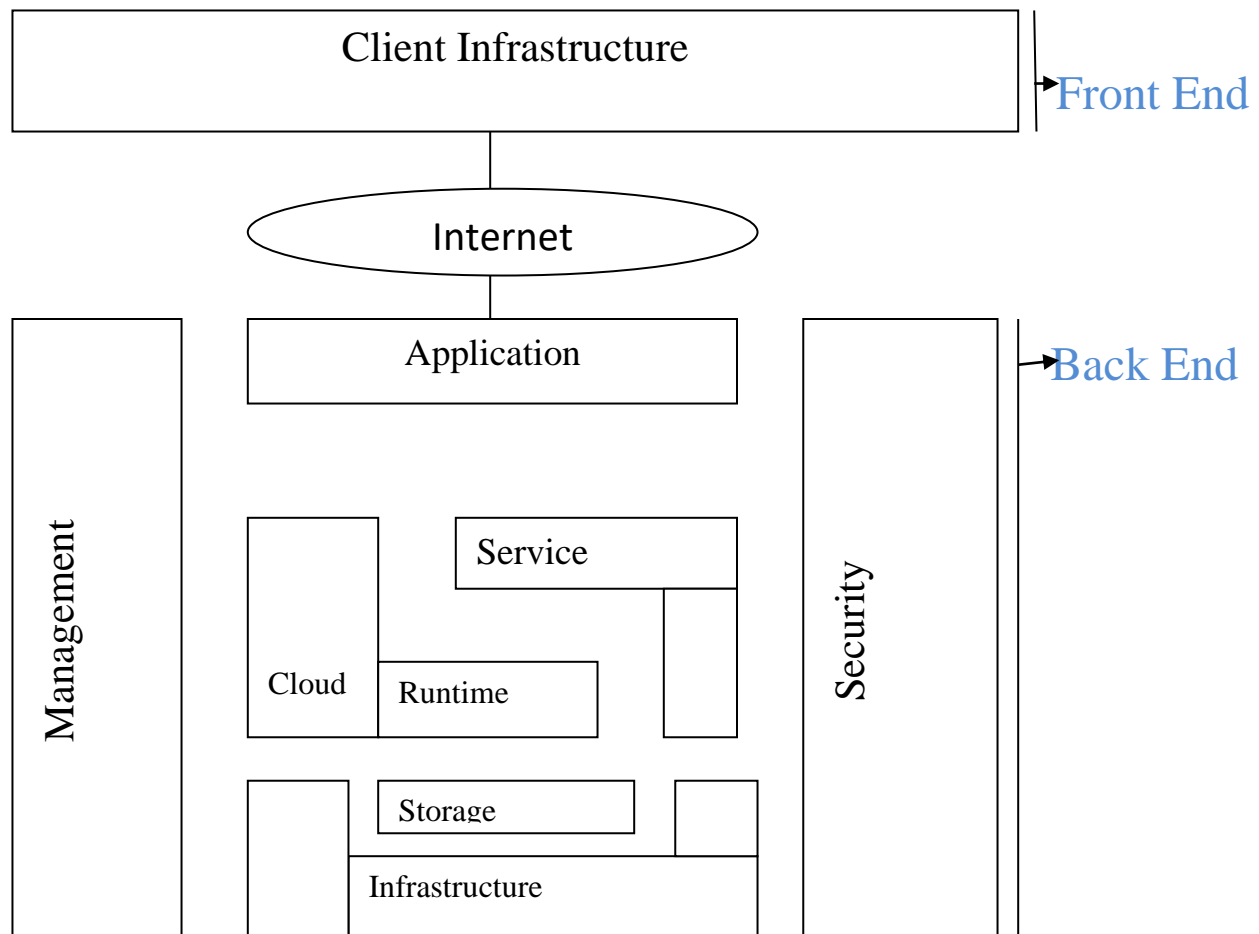
4. Describe cloud computing Architecture

The Cloud Computing architecture comprises of many cloud components, each of them are loosely coupled. We can broadly divide the cloud architecture into two parts:

1. Front End

2. Back End

Each of the ends are connected through a network, usually via Internet. The following diagram shows the graphical view of cloud computing architecture:



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FRONT END

Front End refers to the client part of cloud computing system. It consists of interfaces and applications that are required to access the cloud computing platforms, e.g., Web Browser.

BACK END

Back End refers to the cloud itself. It consists of all the resources required to provide cloud computing services. It comprises of huge data storage, virtual machines, security mechanism, services, deployment models, servers, etc.

5.What is a component of cloud computing?

Some important components of Cloud computing architecture:

1. Client Infrastructure:

Client Infrastructure is a front-end component that provides a GUI. It helps users to interact with the Cloud.

2. Application:

The application can be any software or platform which a client wants to access.

3. Service:

The service component manages which type of service you can access according to the client's requirements.

Three Cloud computing services are:

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

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4. Runtime Cloud:

Runtime cloud offers the execution and runtime environment to the virtual machines.

5. Storage:

Storage is another important Cloud computing architecture component. It provides a large amount of storage capacity in the Cloud to store and manage data.

6. Infrastructure:

It offers services on the host level, network level, and application level. Cloud infrastructure includes hardware and software components like servers, storage, network devices, virtualization software, and various other storage resources that are needed to support the cloud computing model.

7. Management:

This component manages components like application, service, runtime cloud, storage, infrastructure, and other security matters in the backend. It also establishes coordination between them.

8. Security:

Security in the backend refers to implementing different security mechanisms for secure Cloud systems, resources, files, and infrastructure to the end-user.

9. Internet:

Internet connection acts as the bridge or medium between frontend and backend. It allows you to establish the interaction and communication between the frontend and backend.

6. Cloud computing advantage and disadvantage

Advantages of Cloud Computing

As we all know that Cloud computing is trending technology. Almost every company switched their services on the cloud to rise the company growth.

1) Back-up and restore data

Once the data is stored in the cloud, it is easier to get back-up and restore that data using the cloud.

2) Improved collaboration

Cloud applications improve collaboration by allowing groups of people to quickly and easily share information in the cloud via shared storage.

3) Excellent accessibility

Cloud allows us to quickly and easily access store information anywhere, anytime in the whole world, using an internet connection. An internet cloud infrastructure increases organization productivity and efficiency by ensuring that our data is always accessible.

4) Low maintenance cost

Cloud computing reduces both hardware and software maintenance costs for organizations.

5) Mobility

Cloud computing allows us to easily access all cloud data via mobile.

6) IServices in the pay-per-use model

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Cloud computing offers Application Programming Interfaces (APIs) to the users for access services on the cloud and pays the charges as per the usage of service.

7) Unlimited storage capacity

Cloud offers us a huge amount of storing capacity for storing our important data such as documents, images, audio, video, etc. in one place.

8) Data security

Data security is one of the biggest advantages of cloud computing. Cloud offers many advanced features related to security and ensures that data is securely stored and handled.

Disadvantages of Cloud Computing

A list of the disadvantage of cloud computing is given below -

1) Internet Connectivity

As you know, in cloud computing, every data (image, audio, video, etc.) is stored on the cloud, and we access these data through the cloud by using the internet connection. If you do not have good internet connectivity, you cannot access these data. However, we have no any other way to access data from the cloud.

2) Vendor lock-in

Vendor lock-in is the biggest disadvantage of cloud computing. Organizations may face problems when transferring their services from one vendor to another. As different vendors provide different platforms, that can cause difficulty moving from one cloud to another.

3) Limited Control

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As we know, cloud infrastructure is completely owned, managed, and monitored by the service provider, so the cloud users have less control over the function and execution of services within a cloud infrastructure.

4) Security

Although cloud service providers implement the best security standards to store important information. But, before adopting cloud technology, you should be aware that you will be sending all your organization's sensitive information to a third party, i.e., a cloud computing service provider. While sending the data on the cloud, there may be a chance that your organization's information is hacked by Hackers.