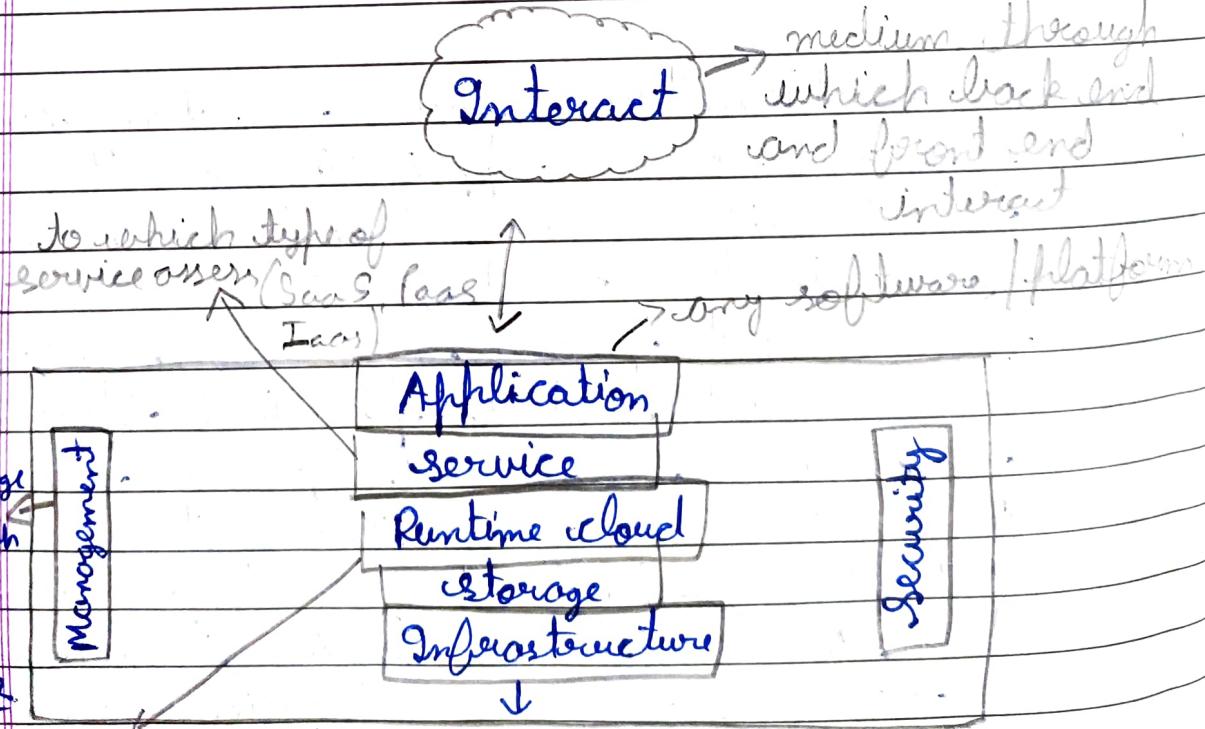


Cloud Computing architecture: As we know, cloud computing technology is used by both small and large organisations to store the information in cloud and access it from anywhere at anytime using the internet connection.

- It is a combination of service oriented architecture and event driven architecture.
- It is divided into following 2 parts:
  - 1) Front end
  - 2) Back end

provides ← Client Infrastructure  
 GUI to interact  
 with cloud.



used to manage  
 components such  
 as service,  
 run-time,  
 storage etc &  
 establish the

them.

provides execution  
 & runtime

provides 3 services:  
 1) Host level    2) Application level  
 3) Network level

) Front End: The front end is used by the client. It contains client-side interfaces and applications that are required to access the cloud computing platforms. The front end includes web servers, thin and fat clients, tablets, and mobile devices.

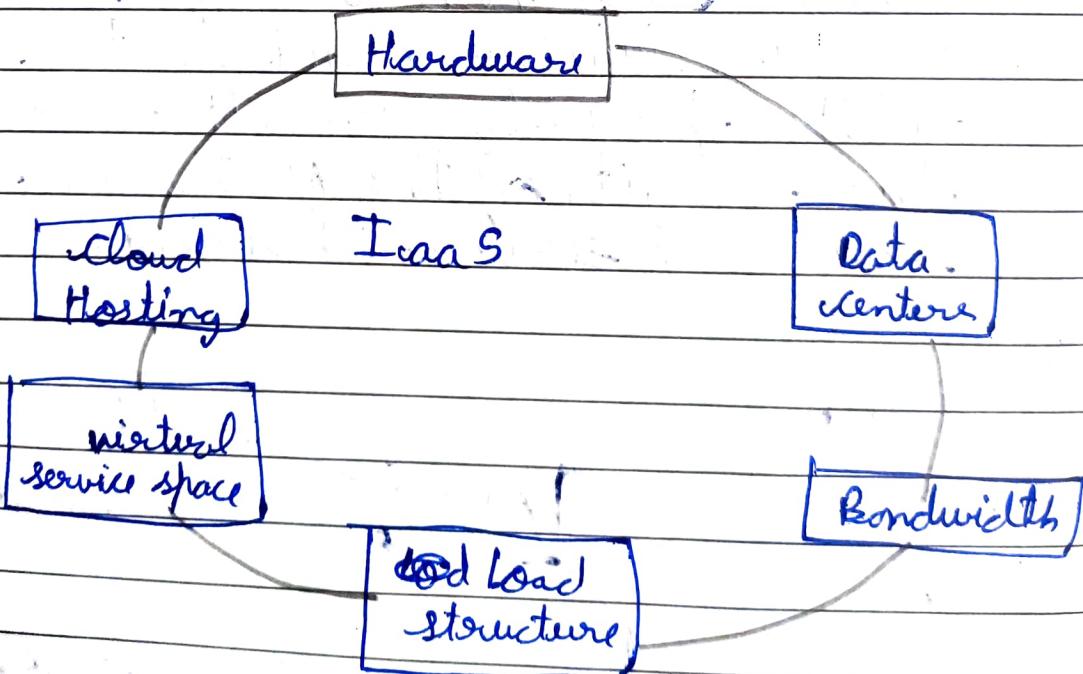
) Back End: The back end is used by the service provider. It manages all the resources that are required to provide cloud computing services. It includes a huge amount of data storage, security mechanism etc.

② IAAS: Infrastructure as a Service (IAAS) is a cloud computing model that provides on demand access to computing resources such as servers, storage, networking and visualization.

→ It is attractive because acquiring computing resources to run applications or store data, the traditional way requires time and capital. Organizations must purchase equipment through procurement process that can take months. They must invest in physical spaces, typically specialized rooms with power and cooling. And after deploying the systems, they need IT professionals to manage and maintain them. All this is challenging to scale when demands spike or business grows. You own the risk of running out of capacity.

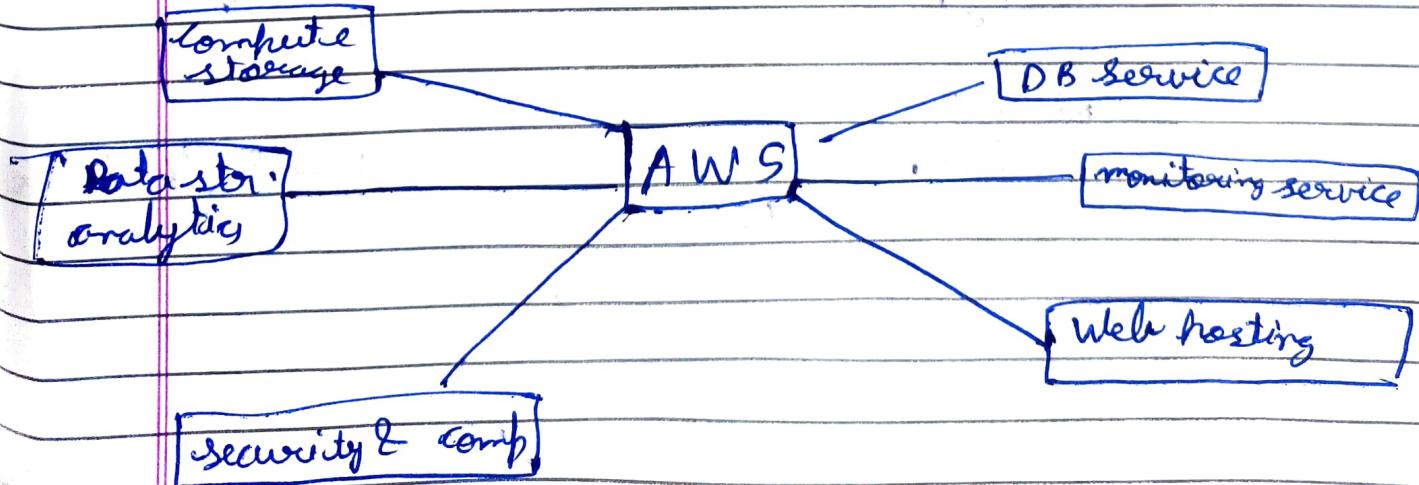
or overloading and paying for infrastructure that you will never use.

- .) It is the on-demand availability of highly scalable computing resources as services over the internet. It eliminates the need for enterprises to procure, configure or measure manage the infrastructure themselves, and they only pay for what they use.
- .) It manages : i) Applications  
ii) Data  
iii) Runtime  
iv) middleware  
v) O/S
- .) It delivers the followings:



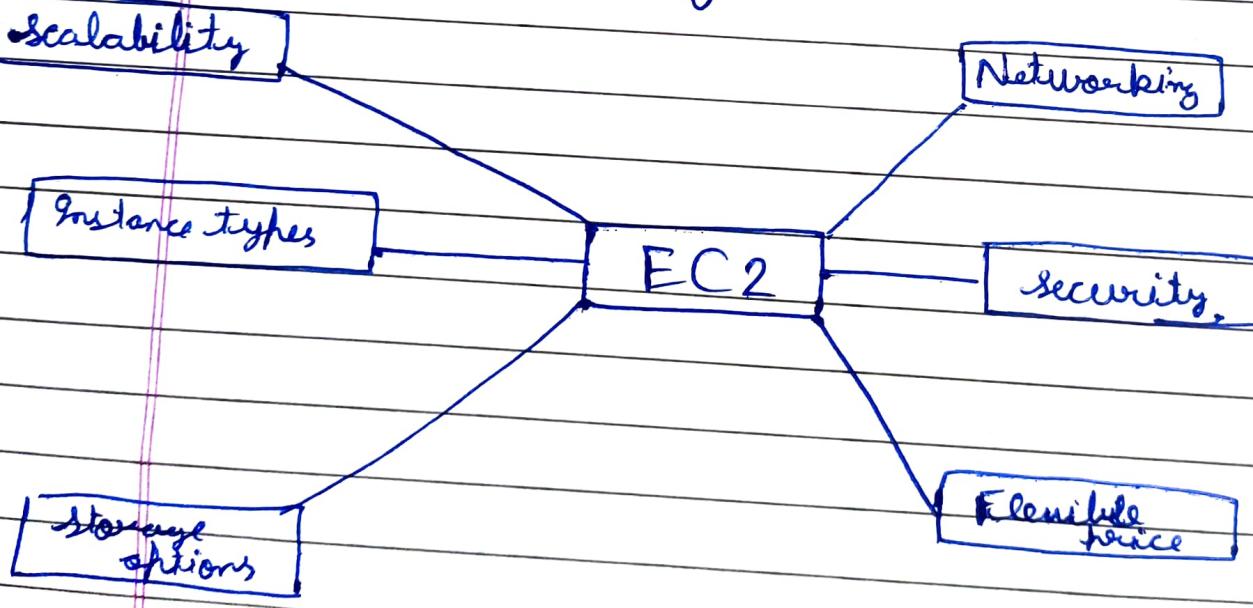
③ AWS: It is the abbreviation used for, Amazon Web services. It offers a broad set of global cloud based products including complete compute, storage, databases, analytics, networking, mobile, developer tool, management tools, IoT, security and enterprise applications: on demand, available in seconds, with pay-as-you-go pricing. From data warehousing to deployment tools, directories to content delivery, over 200 AWS services are there to avail.

- New services can be provisioned quickly, w/o the upfront fixed expense. This allows enterprises, start-ups, small and medium - sized businesses and customers in public sector to ~~get~~ access the building blocks they need to respond quickly to changing business requirements. This white provides you with an overview of the benefits of the AWS cloud and introduces you to the services that make up the platform.



- ④ EC2: It is an abbreviation used for Elastic Compute cloud. It is a web service that provides ~~any~~ resizable compute capacity in the cloud, making web scale cloud computing easier for developers.
- ) It is designed to enable developers to configure and scale computing capacity with minimal friction. By offering a variety of instance types tailored to different use cases, EC2 provides the flexibility to choose the right mix of resources for our application.

- ) Key features of EC2 are:



- ) It has use cases as:
  - i) Web Applications: Host scalable and resilient applications using EC2, Auto scaling, and Elastic load balancing to ensure high availability.
  - 2) Machine Learning: Leverage EC2 instances with powerful GPU's for training and deploying ML models.
  - 3) High Performance computing (HPC): Perform complex simulations, financial modeling or any other computer-intensive tasks using compute-optimized instances.

① Storage as a Service (S3): It is a cloud-based model that allows businesses and individuals to rent storage space from a third-party provider. This model offers flexibility, scalability and cost efficiency, making it an attractive option for organizations of all sizes or it is a cloud business model in which a company rents its storage area infrastructure to another company or individuals to store the data. The storage provider provides the client with the software required to access their stored data.

•) eliminates the need for users to purchase and maintain their own storage infrastructure. It providers offer a range of storage options based on the amount of data, type of data and level of security required. The storage can be provided in the form of file, block or object storage, depending on the need.

# Key features of StaaS are:

i) Scalability: Its providers offer elastic storage solutions that can grow with our needs. Whether we need to increase capacity temporarily or permanently, it allows you to scale up or down as required.

(2)

Security: Ensuring its providers implement robust security measures, including encryption, access controls and regular security audits to ensure data is protected from unauthorized data access & breaches.

•)

In conclusion it is revolutionizing how businesses manage their data storage needs. By offering scalable, secure, and cost effective storage solutions, it enables organizations to adapt to changing data requirements without the burden of managing physical ~~infrastructure~~ infrastructure.

(2)

Amazon S3 use cases:

(a)

Data Backup and recovery: It provides a highly durable storage infrastructure designed for mission-critical and primary data storage. ~~Organizations use~~

(b)

Big Data Analytics: S3 is a key component in big data ecosystems. Businesses use S3 to store massive amounts of raw data and then process and analyze it using other AWS services like EMR, Amazon Athena etc.

- c) Data Archiving: S3, especially with its Glacier and Deep Archive storage classes, is well-suited for long-term data archiving. Businesses use S3 to store infrequently accessed data, regulatory and archives, and compliance records cost effectively.
- (d) Internet of Things: IoT devices generate vast amounts of data that need to be stored reliably and analyzed. S3 provides a scalable storage solution for this data, allowing for real-time analytics and processing using AWS IoT and other services.
- e) Application Hosting: Developers use S3 to host assets for web and mobile applications. S3's integration with AWS cloud.
- ③ Steps for S3: Following are the steps for S3:
- i) Log on to your AWS console. If you don't have an account, create it.
  - ii) In the search bar at the top of the AWS management console, type "Amazon S3".

- DATE: / /  
PAGE:
- iii) Click on 'S3 - Scalable storage in the cloud' and proceed further
  - iv) Click on 'Create Bucket'. A new page will open up, where you have to enter the details and configure ~~your~~ bucket
  - v) Enter the name of your bucket. Do consider to follow the naming rules.
  - vi) Now choose an AWS region nearest to your location or where you want your data to reside
    - .) In the object ownership category, leave it as recommended.
    - .) In Block Public Access settings for this bucket category, ensure that BLOCK ALL PUBLIC ACCESS has been checked (can be changed later)
    - .) In the bucket versioning category, choose disabled. Leave other advance settings as default.
  - vii) Click on Create Bucket and your bucket will be created.