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1. Cloud computing architecture :

Cloud computing means storing and accessing the data and programs on remote servers that are hosted on the internet instead of the computer's hard drive or local server. It is also referred to as internet-based computing. The data that is stored can be files, images, documents, or any other storable document.

Architecture of cloud computing is combination of both SOA (service oriented Architecture) and EDA (Event Driven Architecture). The cloud architecture is divided into 2 parts :

1. Frontend : Frontend refers to the client side of c.c system. It contains all the users interface and applications which are used by the client to access c.c. services. eg: web browser to access cloud platform.

2. Backend : It refers to cloud itself which is used by the service provider. It contains resources as well as manages resources & provides security mechanisms. It also includes huge storage, virtual applications, virtual machines etc.
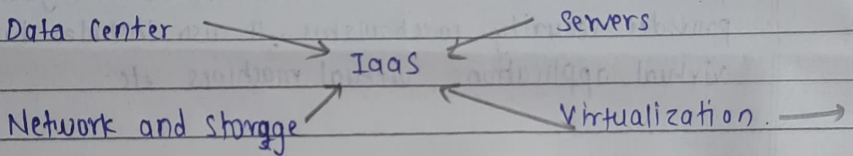
components :

1. Client Infrastructure - It is a part of frontend component. It provides a GUI (graphical User Interface) to interact with the cloud.

2. Application : It is part of backend component that refers to a software or platform to which client access. means it provides service in backend as per the client requirement.

3. Service : Refers to the major 3 types of cloud based services SaaS, PaaS, IaaS. Also manages which type of service the user access.

4. Runtime Cloud : In backend provides the exection and Runtime platform to the virtual machine.

5. Storage : In backend provides flexible and Scalable storage service

6. Infrastructure : In backend refers to hardware & software components of cloud like it includes serves, Storage, network devices etc.

7. Managment : In backend refers to components like applicaf', service, runtime cloud etc.

8. Security : refers to implementaf of different security mechanisms in backend for secure cloud resources, system files & infrastructure to end-users

9. Internet: Acts as medium between frontend and backend & establishes the interact° between frontend & backend

10. Database: In backend refers to provide database for storing structured data such as SQL & NoSQL database.

11. Networking: In backend services that provide networking infrastructure for application in the cloud.

12. Analytics: In backend service that provides analytics capabilities for data in the cloud such as warehousing, business intelligence and machine learning.

2. IaaS:

Infrastructure as a Service is a C.C. model that gives virtualized computing resources over the web, with IaaS, associations can get to and manage versatile infrastructure assets like virtual machines, storage and networking administration parts without the need to put resources into or keep up with actual equipment.

Data Center →
→ Servers
→ IaaS ←
Network and storage ↗
↖ Virtualization. →

How IaaS Architecture work?

· On Demand Access: Users can get to processing resources on-demand allowing them to rapidly arrengment & deploy infrastructure components depending on situat°.

· self-service Provisioning: offers self-support interfaces that empowers users to freely arrangment & manage system resource

· Scalability: It regularly offer level adaptability, allowing users to scale resources up or down based on demand

· Pay-Per-Use Billing: It operates on Pay-per-use or subscription basis, where users only pay for the resources they use

Types of Infrastructure As a Service Resources

· Virtual Machines (VMs): It is virtual instances of computing conditions that emulate the usefulness of physical servers

· Networking: It gives organizing parts that empower clients to associate their virtualized infrastructure to the internet & establish communicat° between various resources.

Load Balancers: convey incoming network traffic across numerous virtual machines or instances to advance execution.

Database: A few IaaS suppliers offers managed database benefits that empowers users to send & manage database in the cloud.

Containers: IaaS platform may offer help for containerized conditions allowing users to deploy & manage containerized applications.

3. AWS:

AWS stands for Amazon Web Service. It is expanded C.C. platform provided by Amazon. It provides a wide range of services with a pay-as-per-use pricing model over the Internet such as Storage, Computing power etc.

AWS comes up with its own network infrasturcture on establishing the datacenters all over the world. It facilitates the users on creating secure environments using Amazon VPC Essential services like Amazon EC2 and Amazon S3 for utilizing the compute and storage service with elastic scaling.

AWS Fundamentals:

Regions: AWS provides the services with respective division of regions. The regions are divided based on geographical areas and will establish data centers.

Availability zones: To prevent data centers for the Natural calamities or any other disasters.

Global Network Infrastucture: AWS ensures the reliability and scalability of services through setting up its own AWS Network Infrastructure globally.

Top AWS services:

Amazon EC2 (Elastic Compute cloud): It provides the scalable computing power via cloud allowing the users to run applications & manage the workload over their remotely.

Amazon S3 (Simple Storage Service): It offers scalable object storage as a service with high durability for storing and retrieving any amt of data.

Aws Lambda: It is a service in serverless Architecture with function as a service facilitating serverless computing. It helps developers to completely focus on logic of code building

Amazon RDS: This is an aws service that simplifies the management of database providing high available relational databases in the cloud.

Amazon VPC (virtual Private cloud): It enables the users to create isolated networks with option of public & private expose within Aws cloud, providing safe & adaptable configurations of their resources.

4. EC2:

Amazon EC2 is one of the most widely used services in Amazon WS. It provides resizable virtual servers in cloud, allowing users to run applications, host websites, process data & more without having to manage physical hardware.

Aws EC2 Instance Type:

1. General Purpose Instances: It provides the balanced resources for a wide range of workloads.

2. Compute Optimized Instances: It provides high-performance processors for compute-intensive applications.

3. Memory-Optimized Instances: High memory-to-CPU ratios for large data sets.

4. Storage Optimized Instances: It provides optimized resources for instance for high, sequential read & write access to large data sets.

5. Accelerated Computing Instances: It is ideal for machine learning, gaming, & 3D rendering.

Use cases for Amazon EC2:

1. Web Hosting: Hosting scalable websites & web applications that can handle varying levels of traffic.

2. Big Data Processing: Running big data applications like Hadoop or Spark on EC2 instances for processing & analyzing large datasets.

3. Application Development and Testing: Creating development & test environments that can be quickly set up & torn down.