

In [ ]: `#CLOUD COMPUTING`

Cloud computing **is** the delivery of computing services—like servers, storage, database—over the internet. It allows users to access **and** store data on remote servers, reducing the need **for** local infrastructure. Types of Cloud Services (4S):

IaaS (Infrastructure **as** a Service):

Provides virtualized computing resources like servers, storage, **and** networking.

Examples: Amazon EC2, Google Compute Engine, Microsoft Azure Virtual Machines.

PaaS (Platform **as** a Service):

Offers platforms to develop, test, **and** deploy applications without managing underlying infrastructure.

Examples: Google App Engine, Microsoft Azure App Service, Heroku.

SaaS (Software **as** a Service):

Delivers software applications over the internet on a subscription basis.

Examples: Google Workspace, Microsoft 365, Salesforce.

FaaS (Function **as** a Service) / Serverless Computing:

Allows running code **in** response to events without managing servers.

Examples: AWS Lambda, Google Cloud Functions, Azure Functions.

Deployment Models (4D):

Public Cloud:

Services are offered over the public internet **and** shared among multiple users.

Examples: Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP).

Private Cloud:

Dedicated to a single organization **for** exclusive use.

Examples: VMware Private Cloud, OpenStack.

Hybrid Cloud:

Combines public **and** private clouds **for** greater flexibility.

Examples: IBM Hybrid Cloud, Microsoft Azure Stack.

Community Cloud:

Shared by multiple organizations **with** common requirements.

Examples: Government **or** research cloud platforms shared among multiple agencies.

Key Characteristics:

On-Demand Self-Service: Resources can be provisioned **as** needed.

Broad Network Access: Accessible over the internet **from** various devices.

Resource Pooling: Multiple users share resources dynamically.

Rapid Elasticity: Resources can scale up **or** down quickly.

Measured Service: Usage **is** monitored, controlled, **and** billed accordingly.