Introduction to Cloud Computing

GR5072 Spring 2023 - Lec 4/26

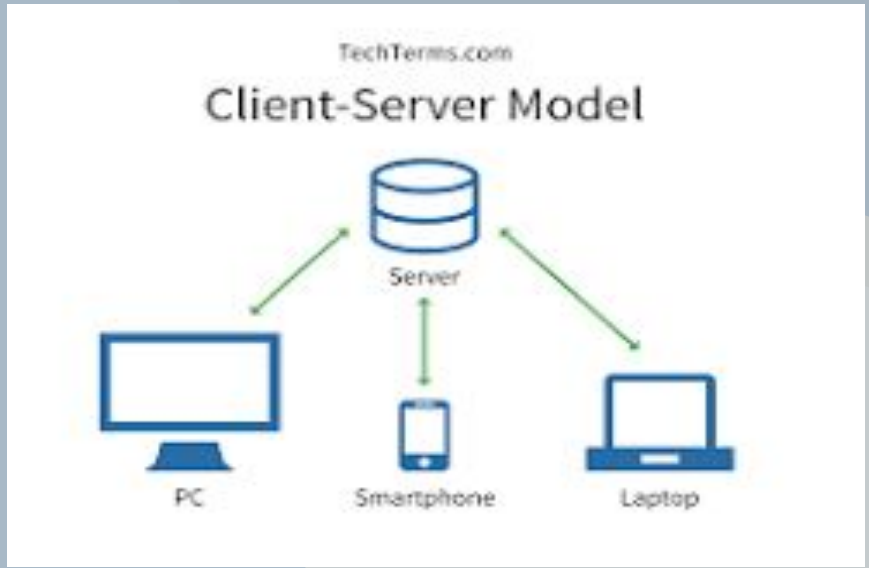
Saira Chawla

TERMINOLOGY

CLIENT SERVER MODEL

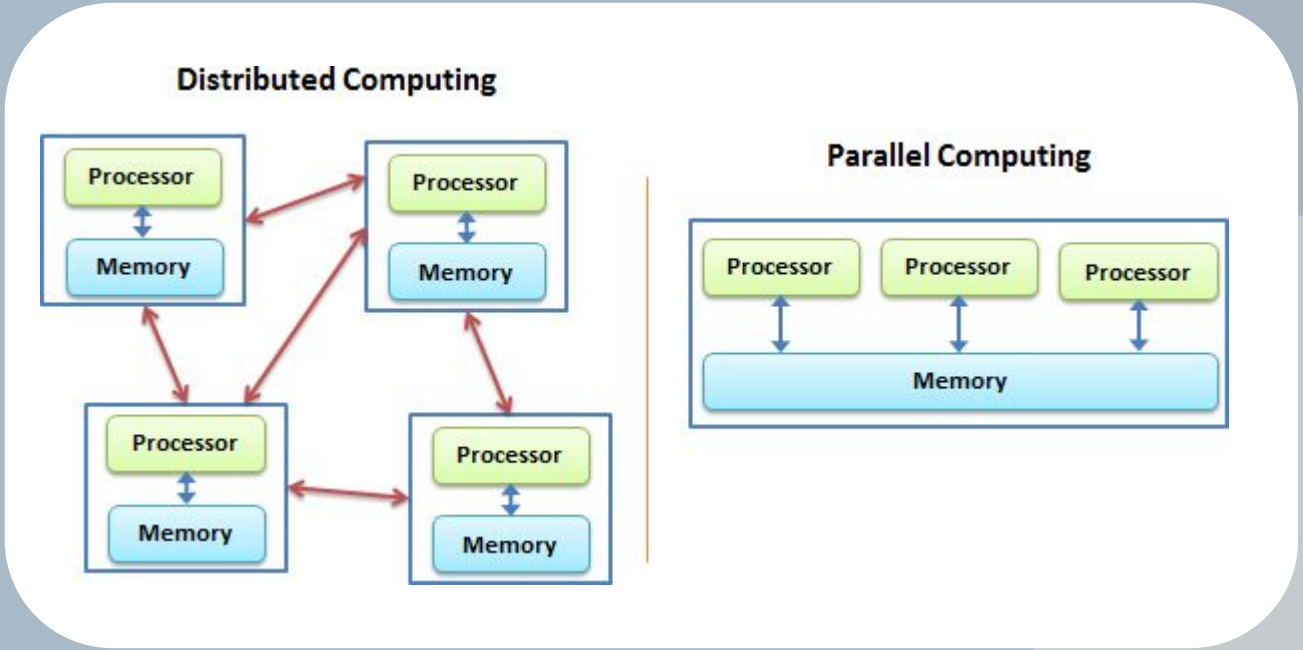
Client is what is interacted with to **make requests**

Server validates the request and **returns information**



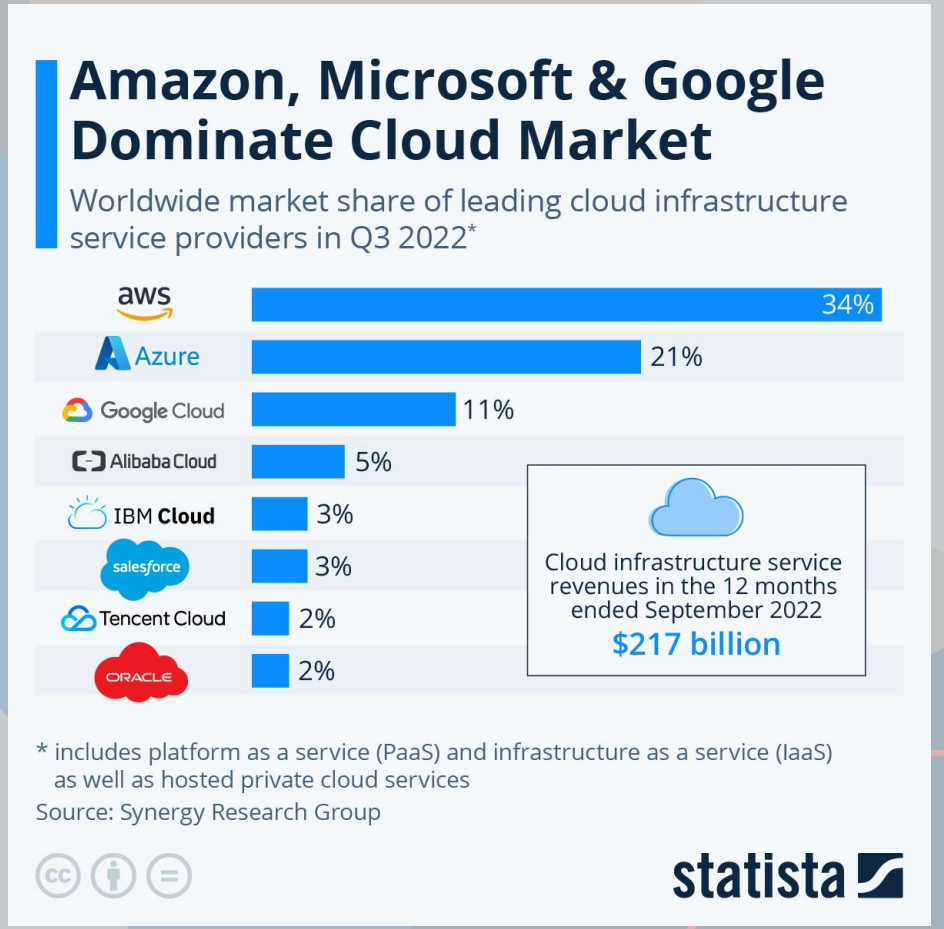
TERMINOLOGY

PARALLEL + DISTRIBUTED COMPUTING



WHAT IS CLOUD COMPUTING?

The on-demand delivery of IT resources over the internet with pay as you go pricing



TERMINOLOGY

Infrastructure as a Service (IaaS):

Contains basic building blocks for IT. Access to networking gestures, hardware, data storage space. Highest level of flexibility and control over IT resources

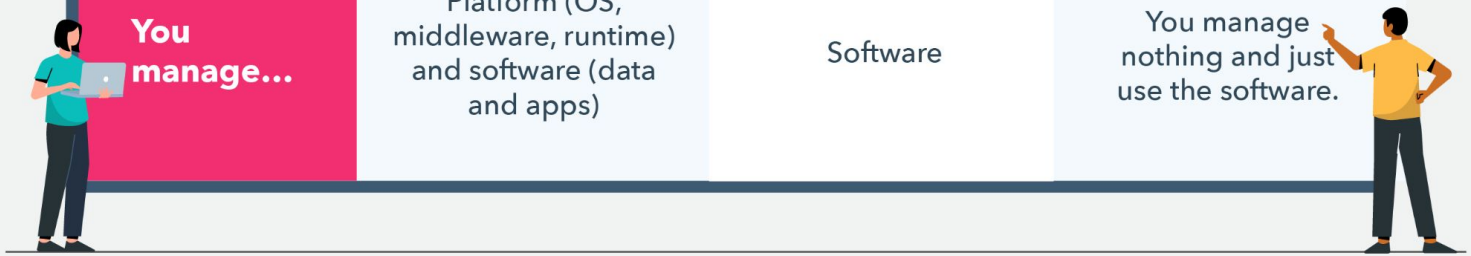
Platform as a Service (PaaS):

The underlying infrastructure is installed, configured, and maintained by the provider. Allows for focus on deployment and management of apps.

Software as a Service (SaaS):

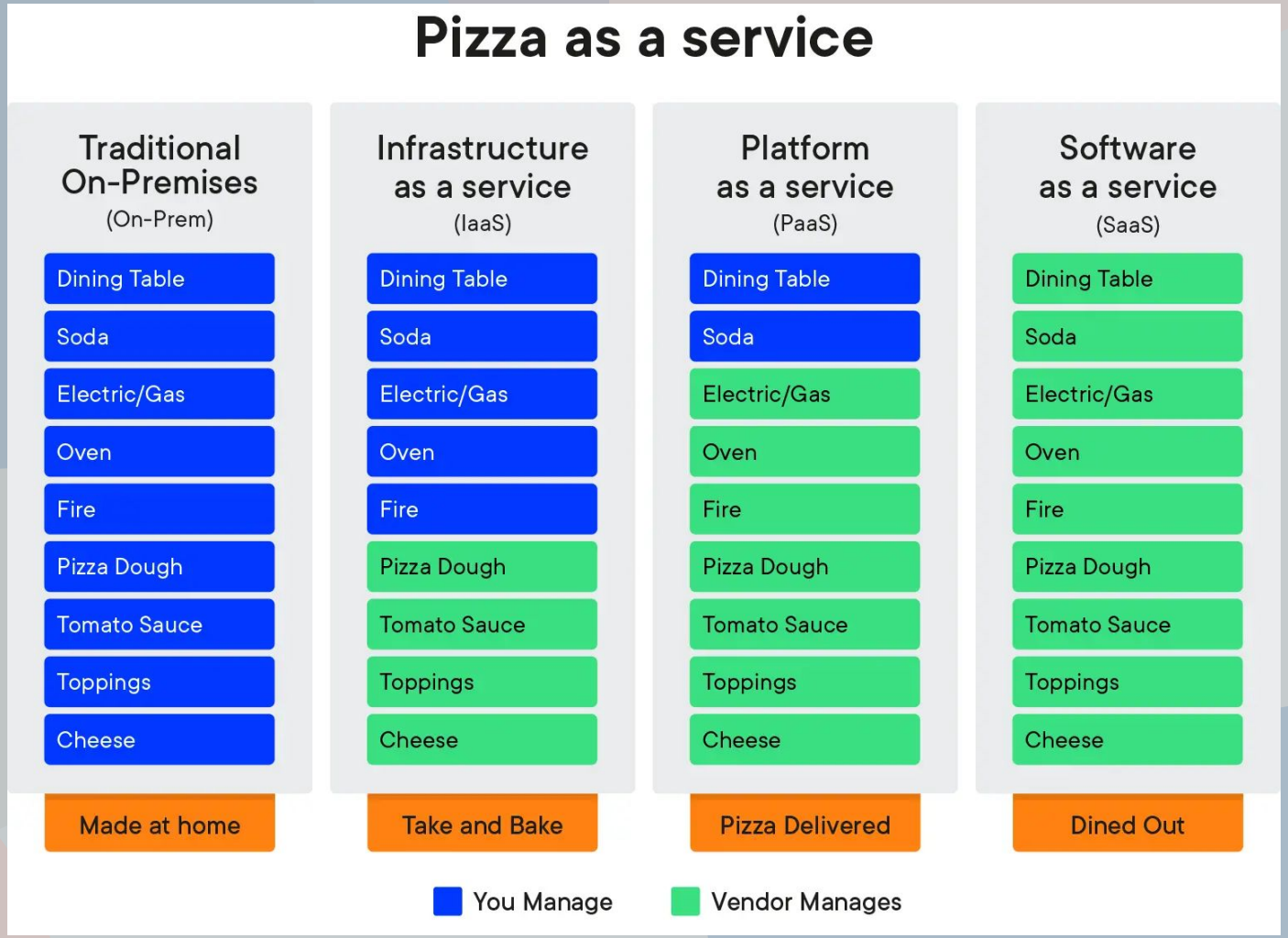
Provides users with cloud-based applications that can be accessed on demand from the internet without maintenance of software.

	IaaS	PaaS	SaaS
Provider manages...	Infrastructure (network, virtualization, hardware)	Infrastructure and platform	Infrastructure, platform, and software
You manage...	Platform (OS, middleware, runtime) and software (data and apps)	Software	You manage nothing and just use the software.



HubSpot

Pizza as a service



Deployment Models

1. Cloud-Based Deployment

- Run all parts of the app in the cloud
- Migrate existing apps to the cloud
- Design and build new apps in the cloud

2. On-Premises Deployment

- Deploy resources by using virtualization and resource management tools
- AKA private cloud deployment

Deployment Models

3. Hybrid Deployment

- Connect cloud-based resources to on-premises infrastructure
- Integrate cloud-based resources with legacy IT apps on premise whereas analytics are on the cloud

MOTIVATION

- **Access your Python code/data** from anywhere and do your **analysis from any device**, be it a PC, tablet or even smartphone.
- **Instantaneously augment your CPU and memory** with a click. Cheaper than buying a faster machine.
- Instantaneously **switch between operating systems and system configurations**.
- Ability to **load multiple Python sessions** at once, or **parallelize your code**.

Benefits of Cloud Computing

VARIABLE EXPENSE

Pay for what you consume as you go

SAVINGS

No time and money needed to maintain data centers

DATA STORAGE

Stop guessing data capacity

LOWER VARIABLE COST

Benefit from massive economics of scale

ACCESSIBILITY

Increase speed and access to resources

WORLDWIDE

Go global in minutes

FURTHER LEARNING

https://aws.amazon.com/education/awseducate/