Lec 11: Concepts of Cloud Computing
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What is cloud computing?

Cloud computing is the on-demand delivery of IT resources over the Internet with pay-as-you-go pricing. Instead of buying, owning, and maintaining physical data centers and servers, you can access technology services, such as computing power, storage, and databases, on an as-needed basis from a cloud provider like Amazon Web Services (AWS), Azure, and Google.

Types of cloud computing

1- Public cloud

Public clouds are owned and operated by third-party cloud service providers, which deliver computing resources like servers and storage over the Internet. Microsoft Azure is an example of a public cloud. *With a public cloud, all hardware, software, and other supporting infrastructure is owned and managed by the cloud provider.* You access these services and manage your account using a web browser.

2- Private cloud

A private cloud refers to cloud computing resources used exclusively by a single business or organization. A private cloud can be physically located in the company's onsite data center. Some companies also pay third-party service providers to host their private cloud. A private cloud is one in which the services and infrastructure are maintained on a private network.

3- Hybrid cloud

Hybrid clouds combine public and private clouds, bound together by technology that allows data and applications to be shared between them. By allowing data and applications to move between private and public clouds, a hybrid cloud gives your business greater flexibility and more deployment options and helps optimize your existing infrastructure, security, and compliance.

Types of Cloud Computing Services

The three main types of cloud computing services include Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). Each type of cloud computing provides different levels of control, flexibility, and management so that you can select the right set of services for your needs.

1- Infrastructure as a Service (IaaS)

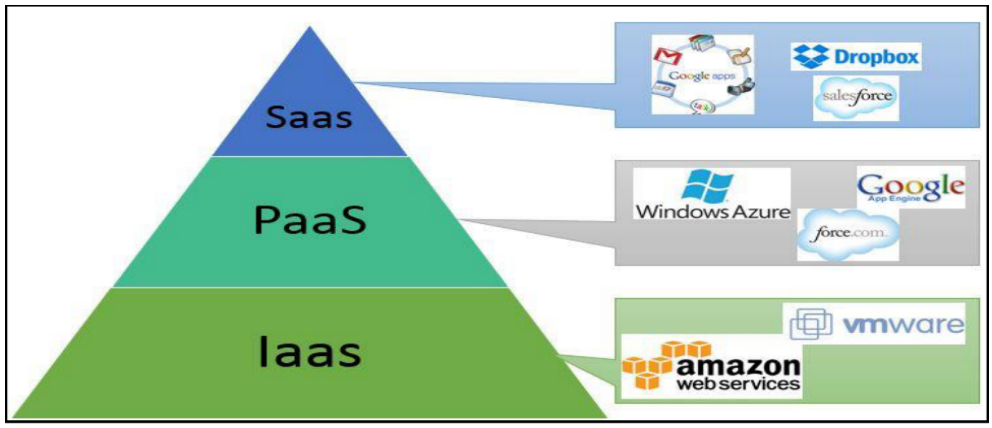
IaaS contains the basic building blocks for cloud IT. It typically provides access to networking features, computers (virtual or on dedicated hardware), and data storage space. IaaS gives you the highest level of flexibility and management control over your IT resources. It is most similar to the existing IT resources with which many IT departments and developers are familiar.

2- Platform as a Service (PaaS)

PaaS removes the need for you to manage underlying infrastructure (usually hardware and operating systems) and allows you to focus on the deployment and management of your applications. This helps you be more efficient as you do not need to worry about resource allocation, capacity planning, software maintenance, patching, or any of the other heavy lifting involved in running your application.

3- Software as a Service (SaaS)

SaaS provides you with a complete product that run and manage by the service provider. In most cases, people referring to SaaS are referring to end-user applications (such as web-based email). With a SaaS offering, you do not have to think about how the service is maintain or how the underlying infrastructure is manage. You only need to think about how you will use that particular software.



The benefits of Cloud Computing

1- It's flexible.
2- It's efficient.
3- It's secure.
4- It's cost-effective.

What is Cloud Storage?

- **Cloud storage** is a cloud-computing model that stores data on the Internet through a cloud-computing provider that manages and operates data storage as a service.
- **Cloud storage** allows you to save data and files in an off-site location that you access either through the public internet or through a dedicated private network connection.

Cloud Storage Application

- ***File storage****:* You can store all types of information in the cloud, including files and email. You can access these things from **any computer** or **mobile device** with an Internet connection. *Dropbox and Google Drive* are some of the most popular cloud-based storage services.

- ***File sharing****:* The cloud makes it easy to **share files** with several people at the same time. For example, you can upload photos to a cloud-based photo service *like Flickr or iCloud Photos*, and then share them with friends and family.
- ***Data Backup****:* Data and applications on a business's servers are backed up and stored on a cloud server. There are apps such as *Carbonite* that **automatically back up your data** to the cloud.