Week 1

Introduction to Cloud Computing

Introduction

Cloud Computing

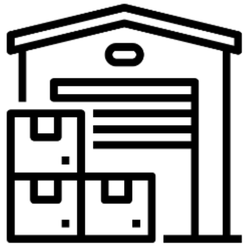
- Help to storing data, streaming video.
- Help to hosting a website all require managing hardware and software.
- You will learn :
  - Explore common cloud computing services
  - Explore the benefits of cloud computing
  - Decide which cloud deployment model is best for you

Week 1

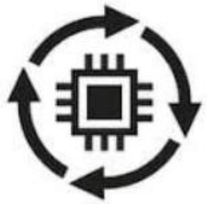
What is Cloud Computing?

What is Cloud Computing?

- Renting resources on another computer
- Pay for what you use



Storage Space



CPU cycle

What is Cloud Computing ?

The company that providing this services called as :

- Cloud Provider

E.g.

Microsoft

Google

Amazon

What is Cloud Provider ?

Responsible for :

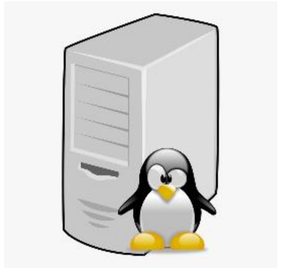
- Physical hardware required to execute your work and keep it up-to-date.
- The computing services offered tend to vary by cloud provider.

Cloud Computing Services

Compute Power

When you build solutions using cloud computing, you can choose how you want work to be done based on your resources and needs.

- E.g.



Linux server

Web Application

Create a Virtual machine(VM) to have more control and responsibility over maintenance.

Compute Power

Containers

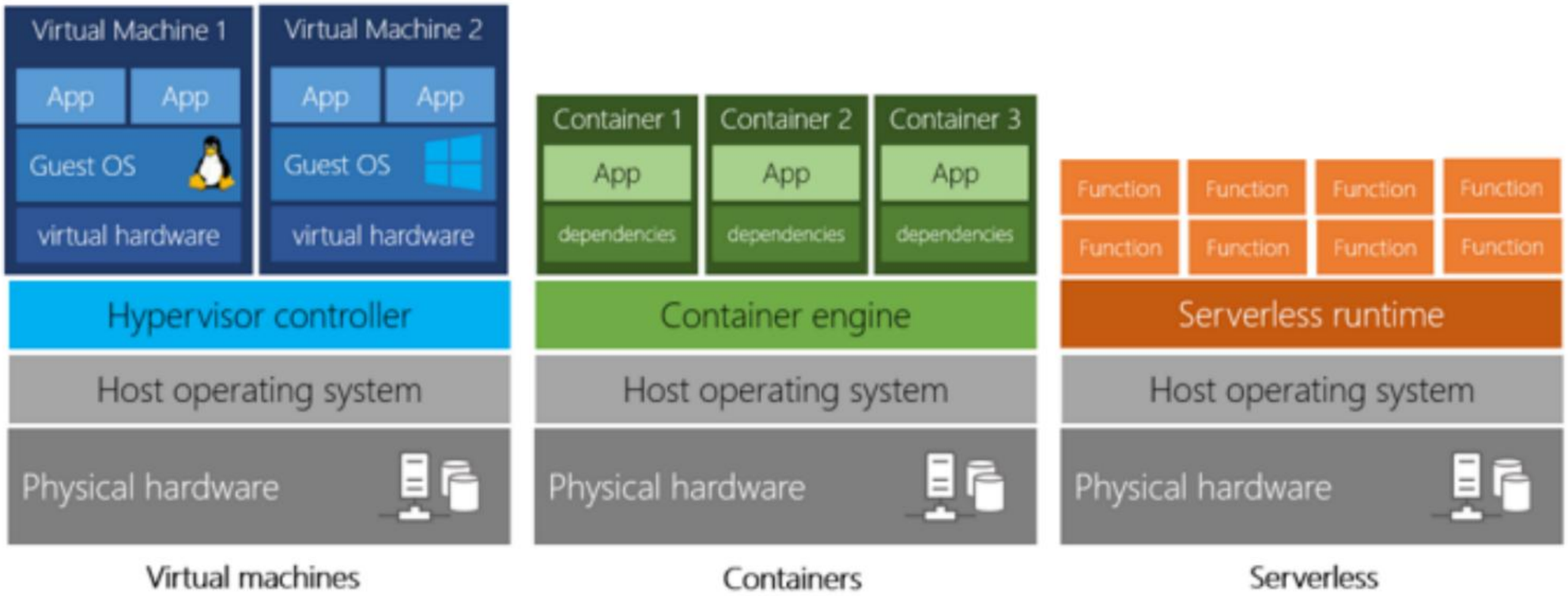
- provides a consistent, isolated execution environment for application.
- application and all its dependencies is packaged into a “container”.
- Allows the container to start up in just a few seconds.
- E.g. : Docker.

Compute Power

Serverless computing

- allows you to run the code without creating, configuring, or maintaining a server
- application is separate into several functions that run when triggered by some actions.

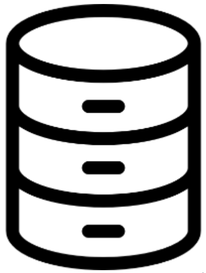
Comparison


Virtual Machine 1
App
App
Guest OS
virtual hardware
Virtual Machine 2
App
App
Guest OS
virtual hardware
Hypervisor controller
Host operating system
Physical hardware
Virtual machines
Container 1
App
dependencies
Container 2
App
dependencies
Container 3
App
dependencies
Container engine
Host operating system
Physical hardware
Containers
Function
Function
Function
Function
Function
Function
Function
Function
Serverless runtime
Host operating system
Physical hardware
Serverless

Cloud Computing Services

Storage

- a services that can handle data
- Store data into cloud-based data storage.



Database

Files

Advantages:

- scale to meet your needs.

Cloud Computing Services

- Networking
  Secure connection between the cloud provider and your company

- Analytics
  Visualizing telemetry and performance data

Cloud Computing Services

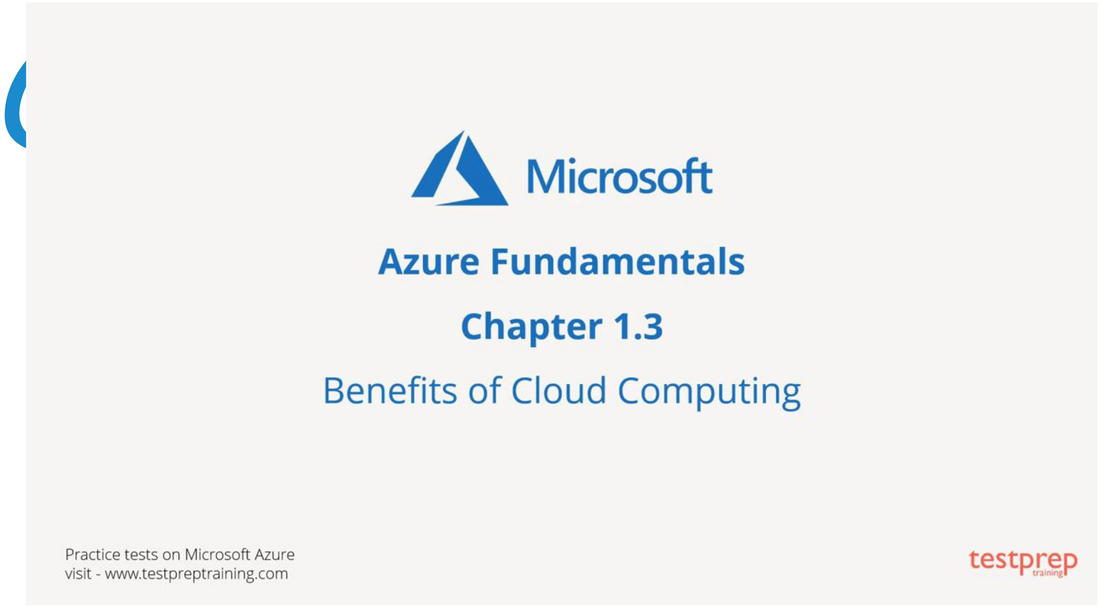
Goals :

- Run a business easier and more efficient
  (Small start up or large enterprise)

- Offer wide range of services.
  (According to the unique and different needs of the business)

Week 1

Benefits of Cloud C



Benefits

Cost-effective

- pay-as-you-go or consumption-based pricing model
- better cost prediction

Scalable

- increase or decrease the resources and services used based on the demand or workload
- Cloud computing supports both vertical and horizontal scaling depending on your needs.

Benefits

Scalable

- Vertical scaling
  - Known as “scaling up”
  - process of adding resources to increase the power of an existing server.
  - E.g. Adding more CPU, Adding more memory
- Horizontal scaling
  - Known as “scaling out”
  - process of adding more servers that function together as one unit.
  - E.g. have more than one server processing incoming requests.

Benefits

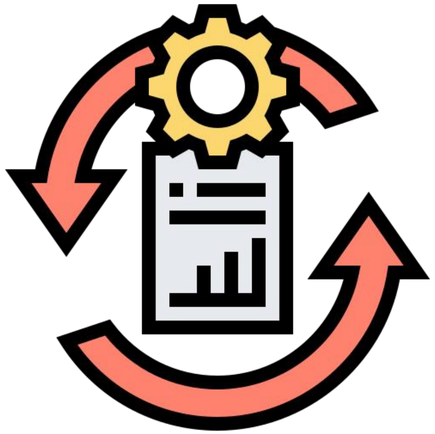
Elastic

- can compensate by automatically adding or removing resources.

current

- able to focus on what matters:
  - building and deploying applications.
- computer hardware is maintained and upgraded by the cloud provider.

Benefits



Reliable

- offer data backup, disaster recovery, and data replication services
- redundancy is often built into cloud services

Global

- fully redundant datacenters located in various regions
- replicate your services into multiple regions for redundancy and locality

Benefits

Secure

- offer a broad set of policies, technologies, controls, and expert technical skills that can provide better security

Physical Security

- cloud providers invest heavily in walls, cameras, security personnel to protect physical assets
- ensure employees have access only to those resources that they've been authorized to manage.

Benefits

Secure

Digital Security

- authorized users to be able to log into virtual machines or storage systems
- offer tools that help you mitigate security threats

Week 1

Economies of Scale

Economies of scale

- ability to do things more efficiently or and more cheaper per unit when operating in larger scale