

# AZ-900

## Learning path 01: Cloud concepts



# Learning path 01—outline

You will learn the following concepts:

## 1 Cloud computing

- What is cloud computing
- Shared responsibility
- Cloud models
- Capital vs operational costing

public  
private  
hybrid

## 2 Cloud benefits

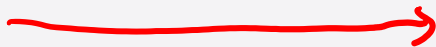
- Benefits of the cloud

?

## 3 Cloud service types

- IaaS, PaaS, and SaaS

Pizza

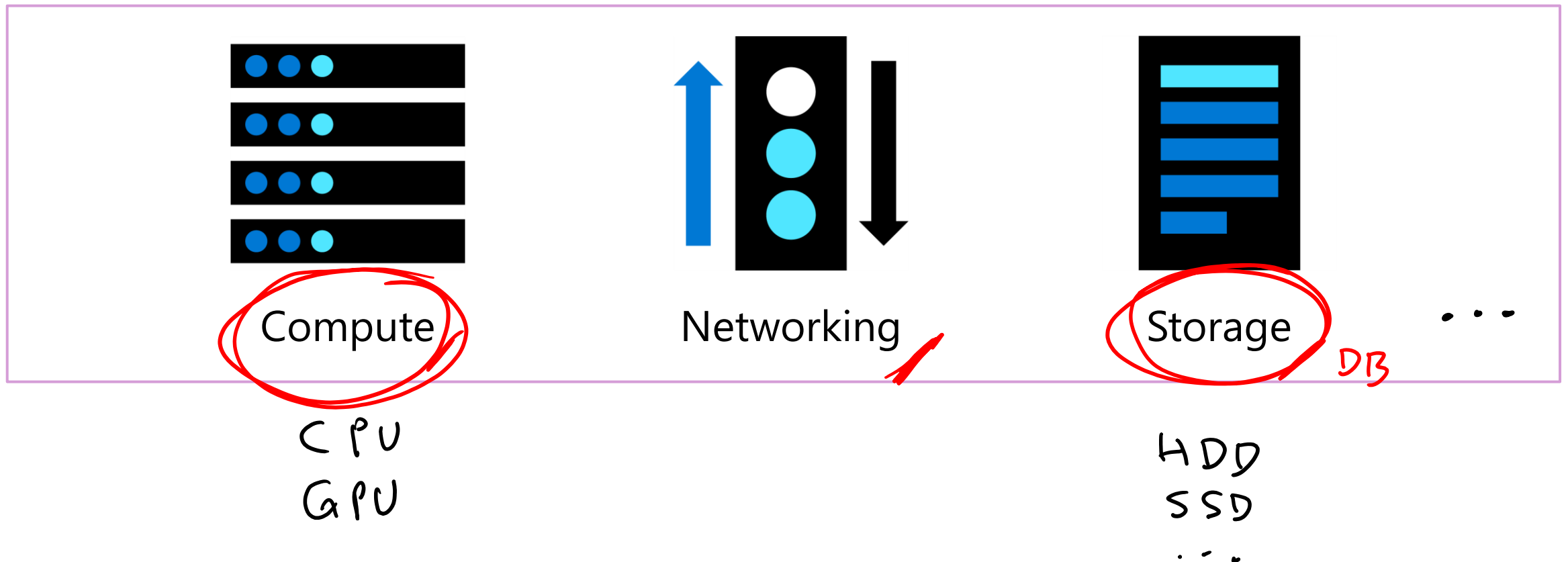


# Cloud computing



# What is cloud computing?

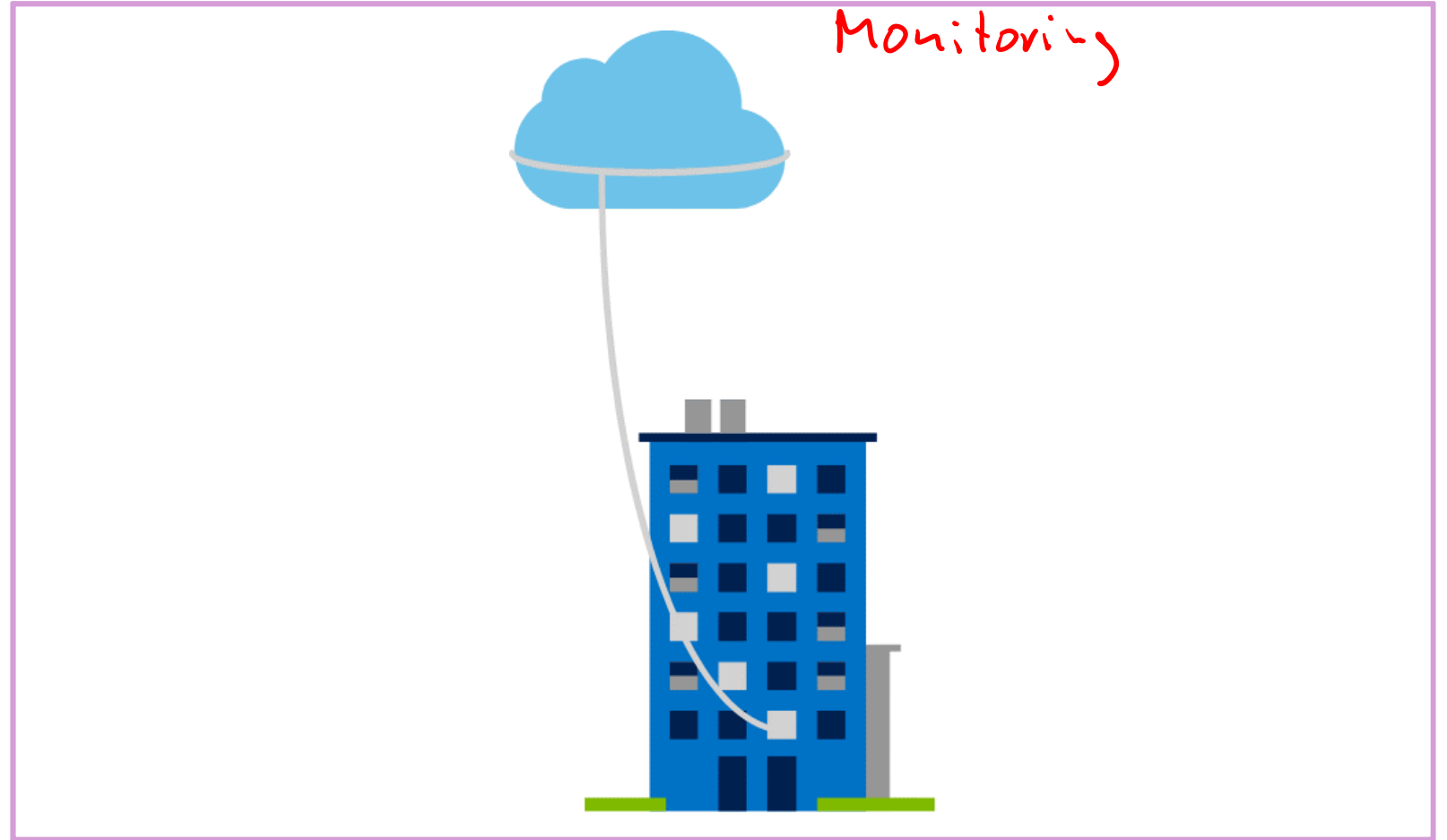
**Cloud computing** is the delivery of computing services over the internet, enabling faster innovation, flexible resources, and economies of scale.



# Private cloud

- Organizations create a cloud environment in their datacenter.
- Organizations are responsible for operating the services they provide.
- Does not provide access to users outside of the organization.

On premises Level Automatisierung  
Self Service  
cost Mgmt  
Security  
Monitoring

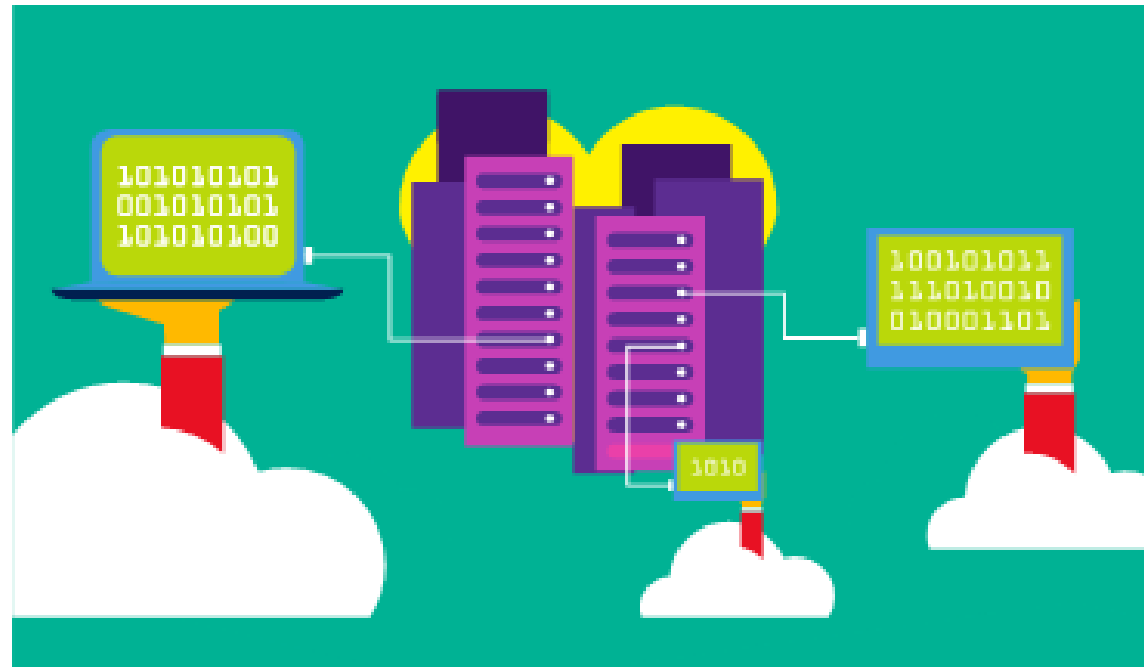


# Public cloud

- Owned by cloud services or hosting provider.
- Provides resources and services to multiple organizations and users.
- Accessed via secure network connection (typically over the internet).

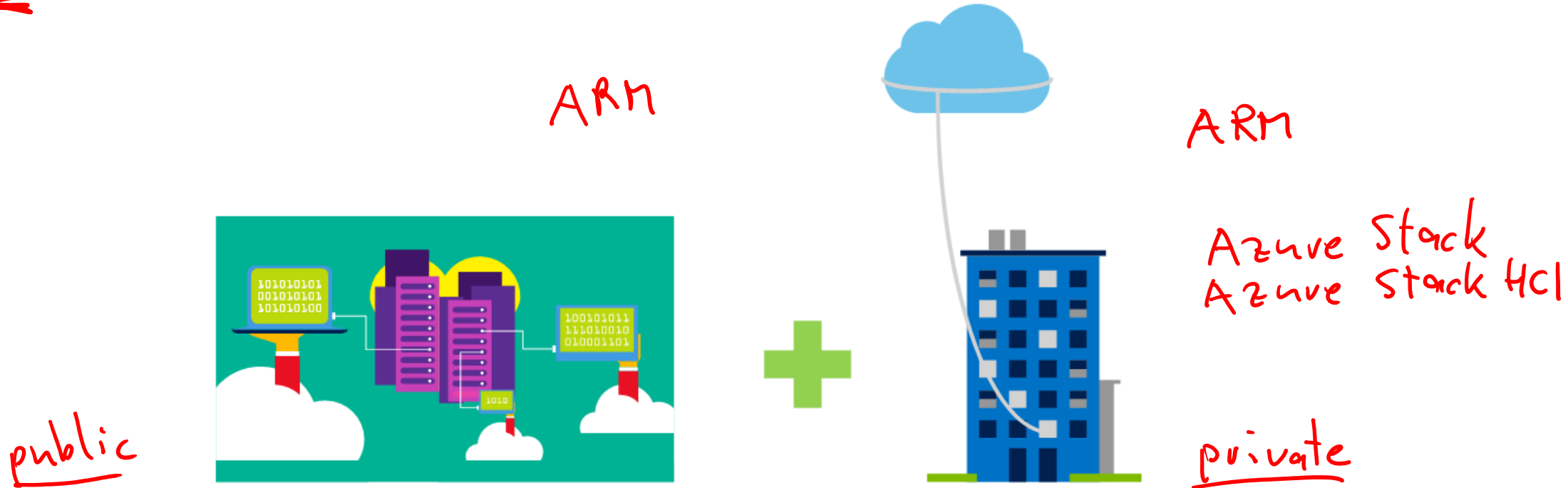
AWS  
Windows Azure 2011  
Azure 2013 ARN

GCP  
IBM



Alibaba

# Hybrid cloud



Combines **public** and **private** clouds to allow applications to run in the most appropriate location.

# Cloud model comparison

## Public cloud

- No capital expenditures to scale up.
- Applications can be quickly provisioned and deprovisioned.
- Organizations pay only for what they use.

## Private cloud

- Hardware must be purchased for start-up and maintenance.
- Organizations have complete control over resources and security.
- Organizations are responsible for hardware maintenance and updates.

## Hybrid cloud

- Provides the most flexibility.
- Organizations determine where to run their applications.
- Organizations control security, compliance, or legal requirements.



# Compare CapEx vs. OpEx

Investitionen

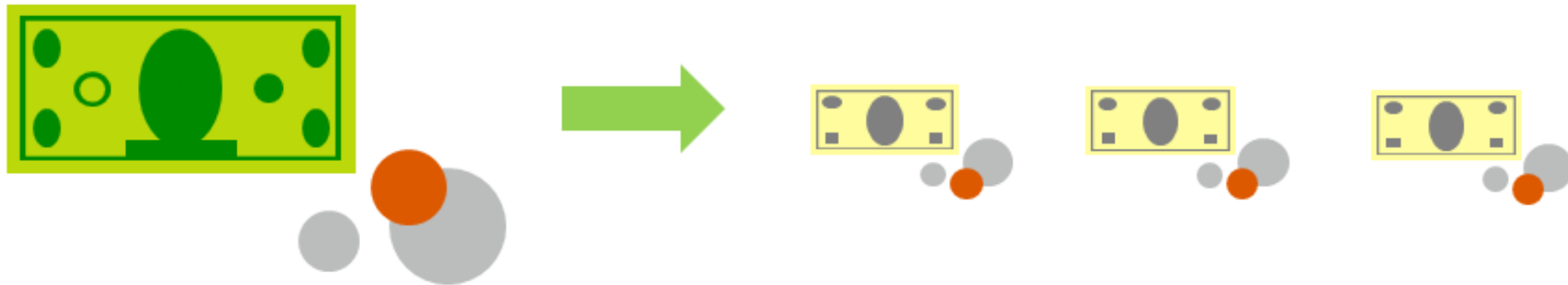
## Capital expenditure (CapEx)

- The upfront spending of money on physical infrastructure.
- Costs from CapEx have a value that reduces over time.

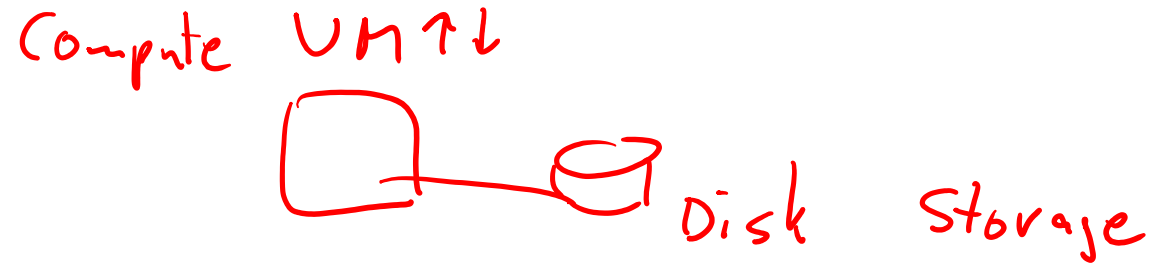
Betriebskosten

## Operational expenditure (OpEx)

- Spend on products and services as needed, pay-as-you-go.
- Get billed immediately.



# Consumption-based model



Cloud service providers operate on a consumption-based model, which means that end users only pay for the resources that they use.

- Better cost prediction. ←
- Prices for individual resources and services are provided.
- Billing is based on actual usage.

# Cloud benefits

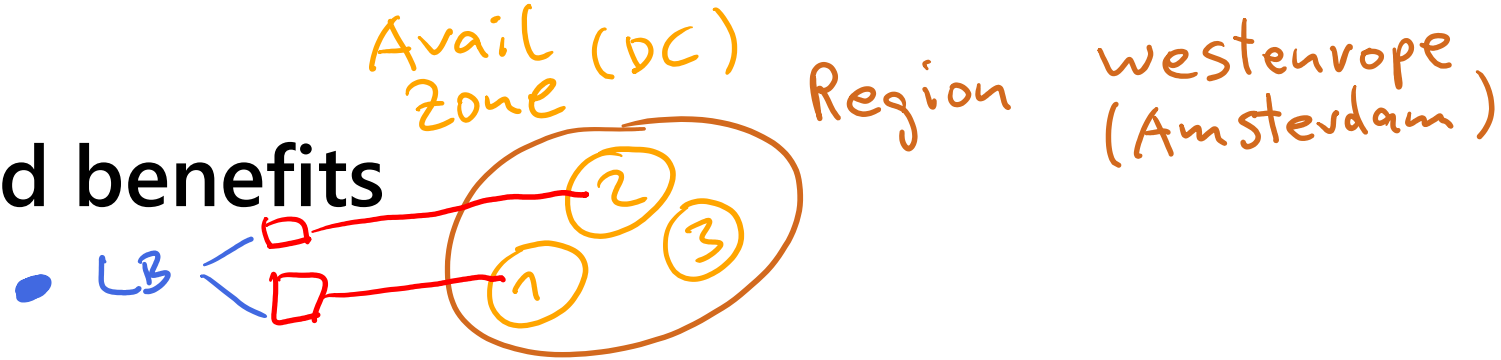
VM  
On Prem  
😊

Lift & shift  
→

VM  
Cloud  
😞



# Cloud benefits



High availability 

Elasticity

Scalability

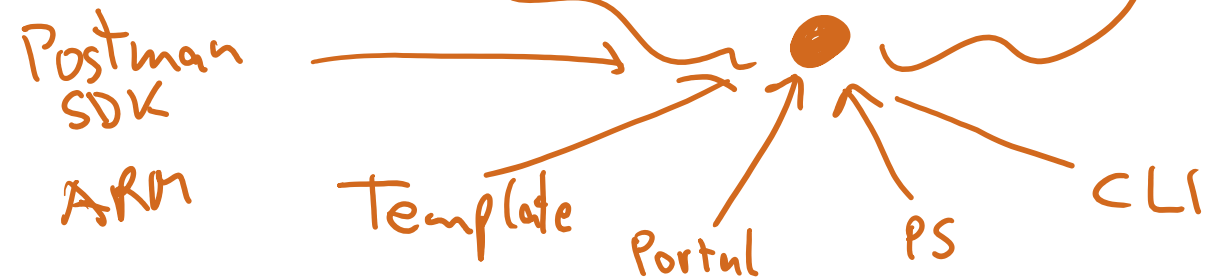
Reliability

Predictability

Security

Governance  Policies

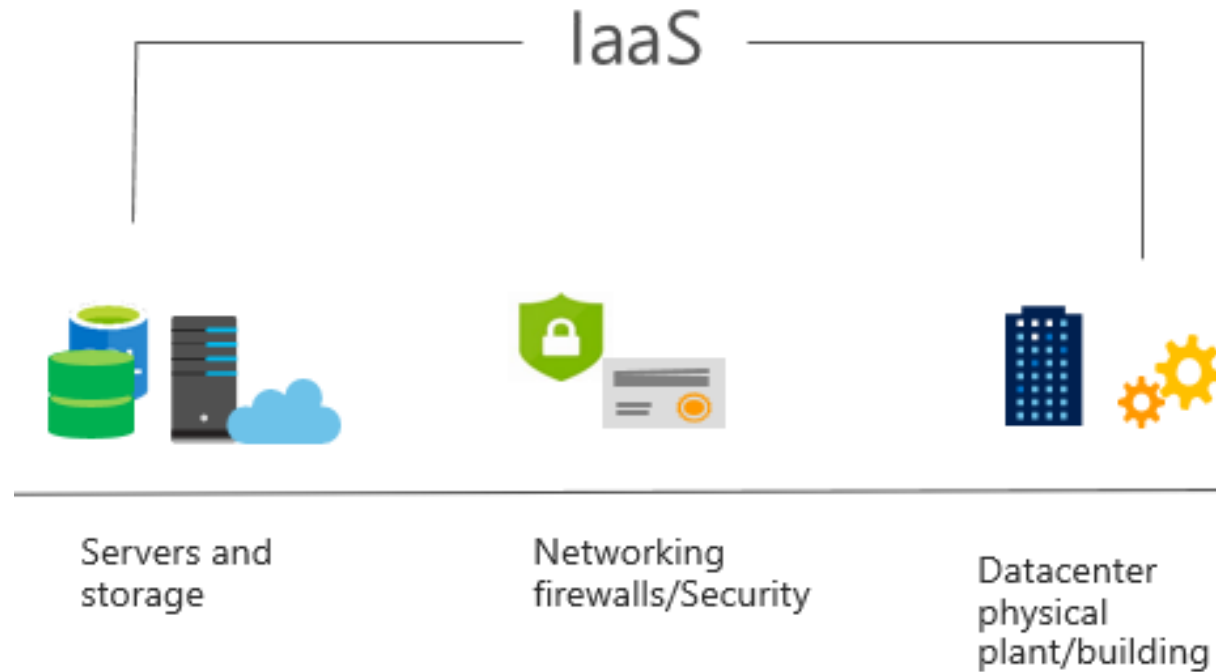
Manageability



# Cloud service types

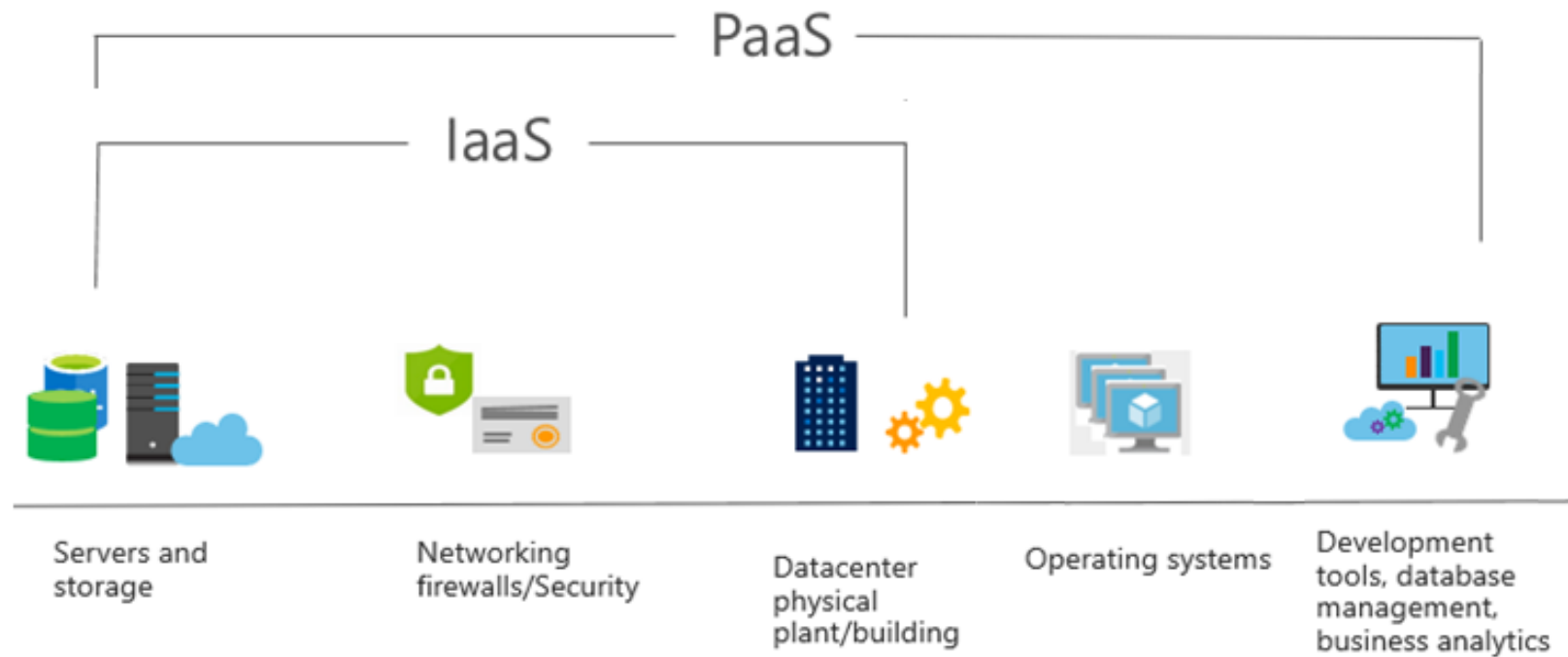


# Infrastructure as a service (IaaS)



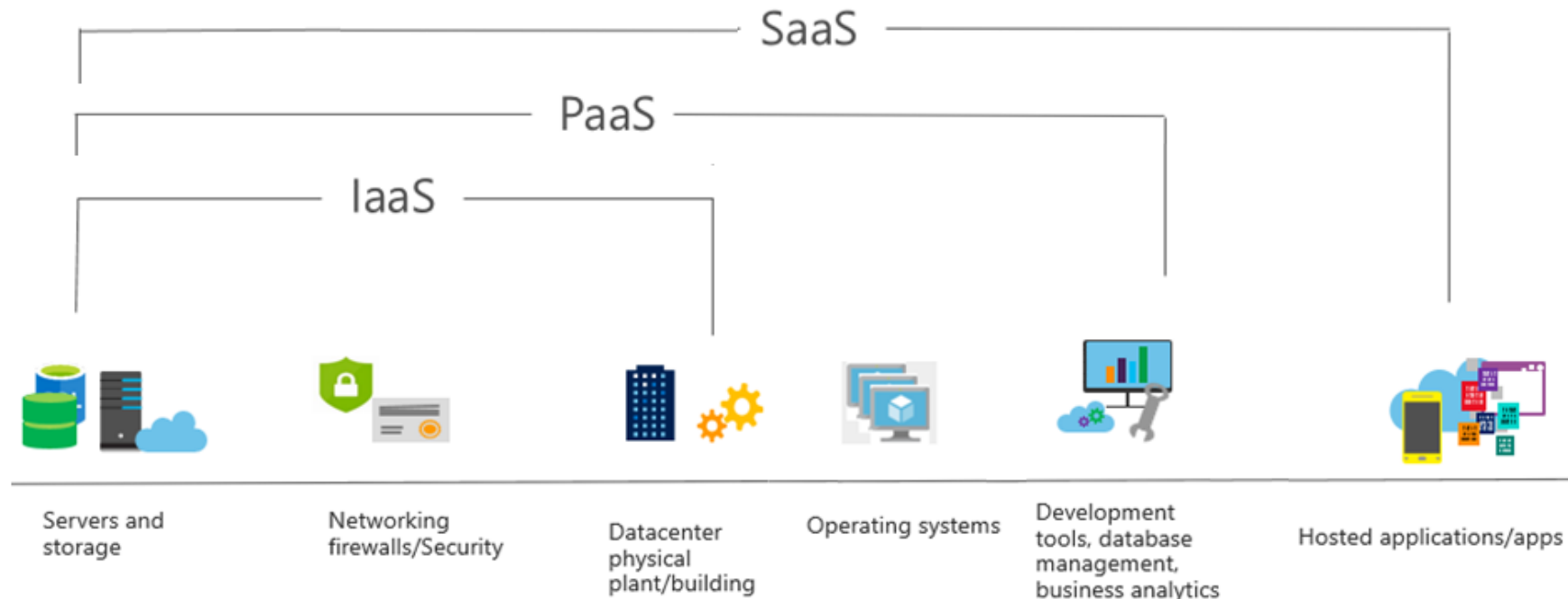
Build pay-as-you-go IT infrastructure by renting servers, virtual machines, storage, networks, and operating systems from a cloud provider.

# Platform as a service (PaaS)



Provides an environment for building, testing, and deploying software applications; without focusing on managing underlying infrastructure.

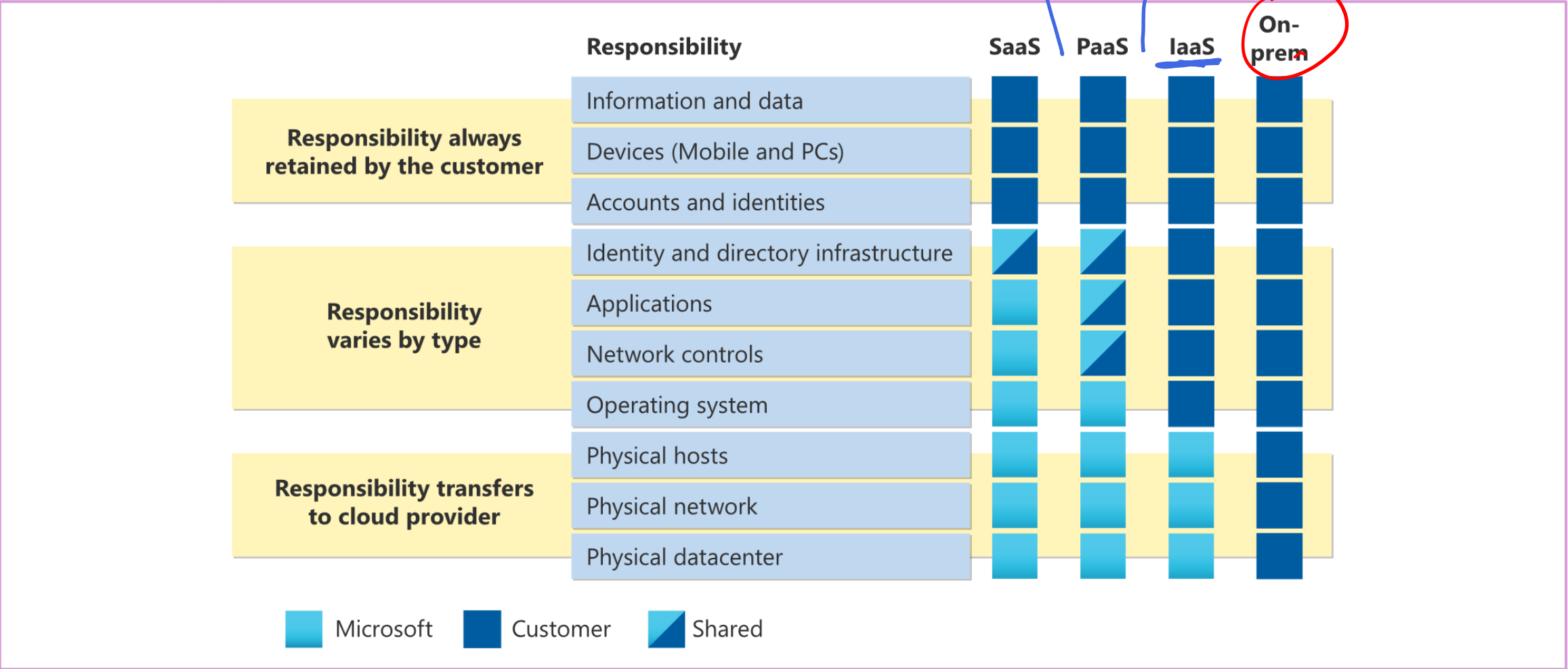
# Software as a service (SaaS)



Users connect to and use cloud-based apps over the internet: for example, Microsoft Office 365, email, and calendars.



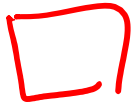
# Shared responsibility model



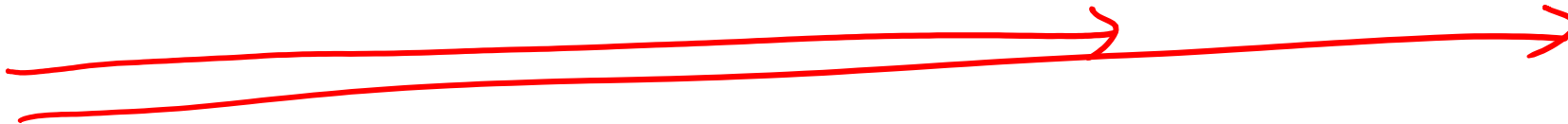
# Cloud service comparison

IaaS	Container CaaS	PaaS	Functions FaaS	SaaS
<ul style="list-style-type: none"><li>• The most flexible cloud service.</li><li>• You configure and manage the hardware for your application.</li></ul>		<ul style="list-style-type: none"><li>• Focus on application development.</li><li>• Platform management is handled by the cloud provider.</li></ul>		<ul style="list-style-type: none"><li>• Pay-as-you-go pricing model.</li><li>• Users pay for the software they use on a subscription model.</li></ul>

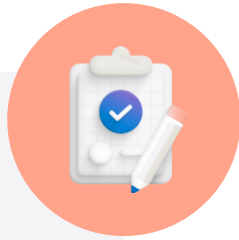
VMS



Kubernetes



# Learning path 01 review



## Microsoft Learn Modules ([learn.microsoft.com/training](https://learn.microsoft.com/training))

- The shared responsibility model
- Public, private, and hybrid-cloud
- Benefits of cloud computing
- Cloud service types

Scaling

IaaS  
↓  
PaaS  
SaaS