Microsoft

AZ-900

Learning path 01:
Cloud concepts

AWS
GCP
IBM
Alibaba
...

Region
=Location

① ③
②
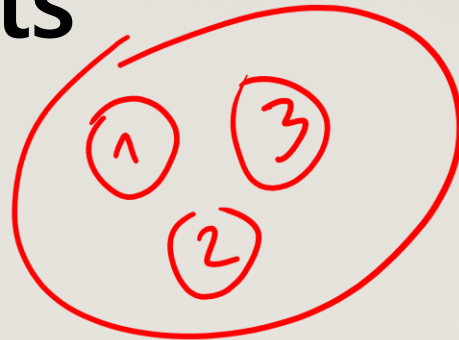
Avail
Zones = DC

Learning path 01—outline

You will learn the following concepts:

1 **Cloud computing**

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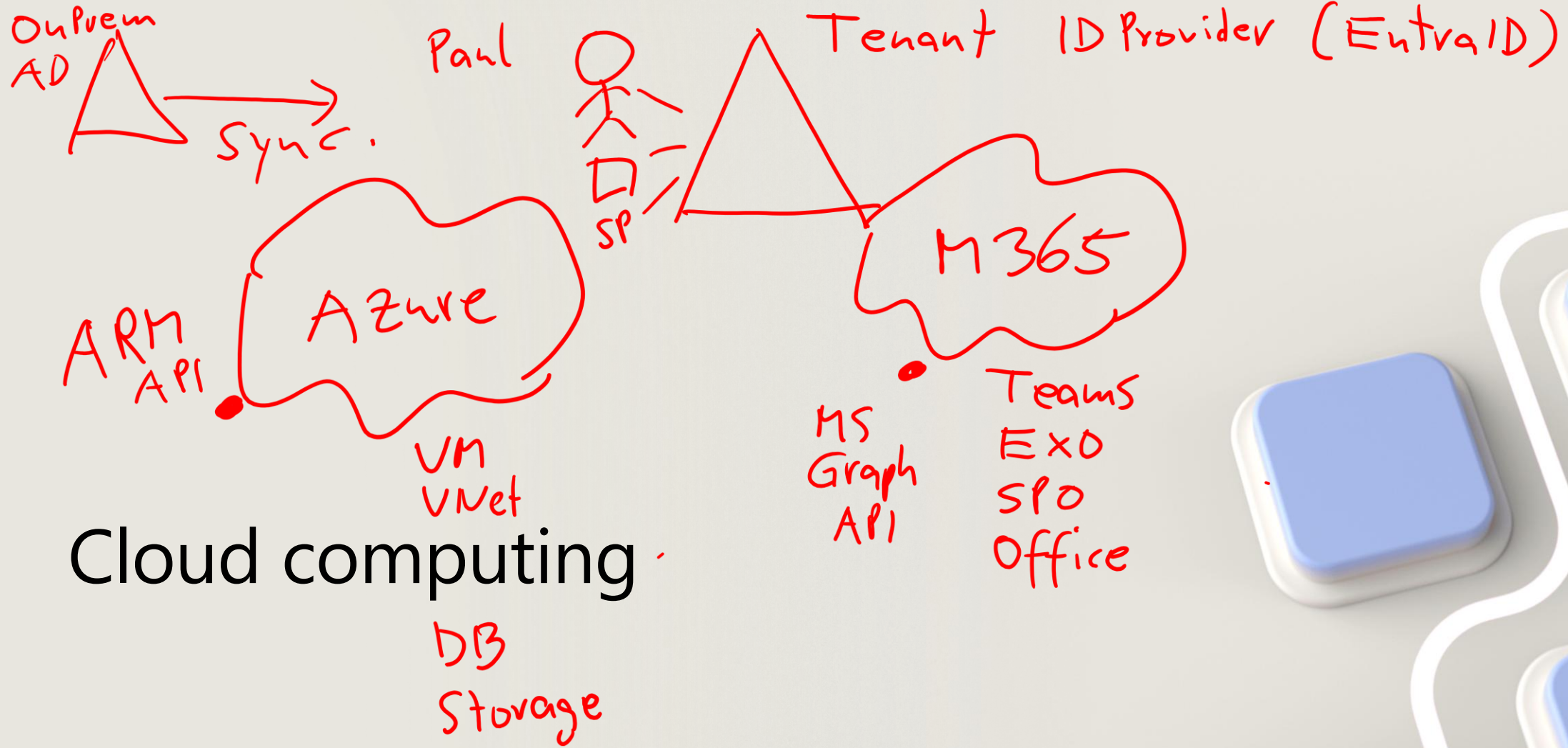- Shared responsibility
- Cloud models
- Capital vs operational costing

2 **Cloud benefits**

- Benefits of the cloud

3 **Cloud service types**

- IaaS, PaaS, and SaaS

Cloud computing
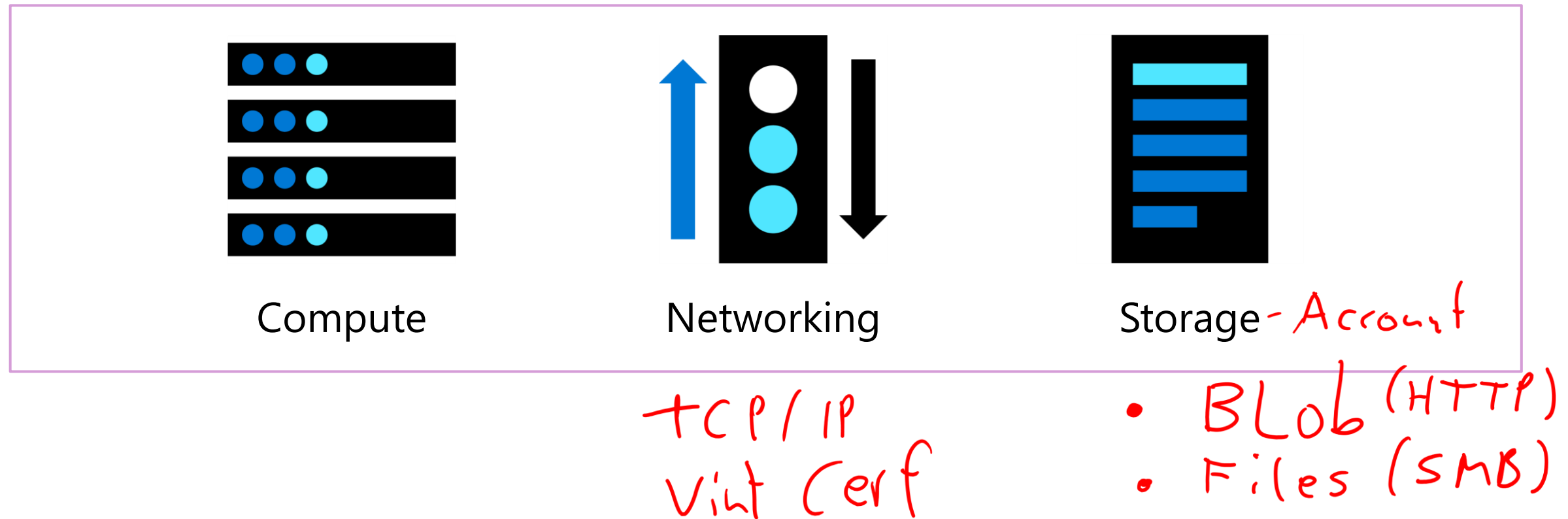
What is cloud computing?

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

Compute   Networking   Storage - Account

TCP / IP
Vint Cerf

- BLob (HTTP)
- Files (SMB)

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.

NIST

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).
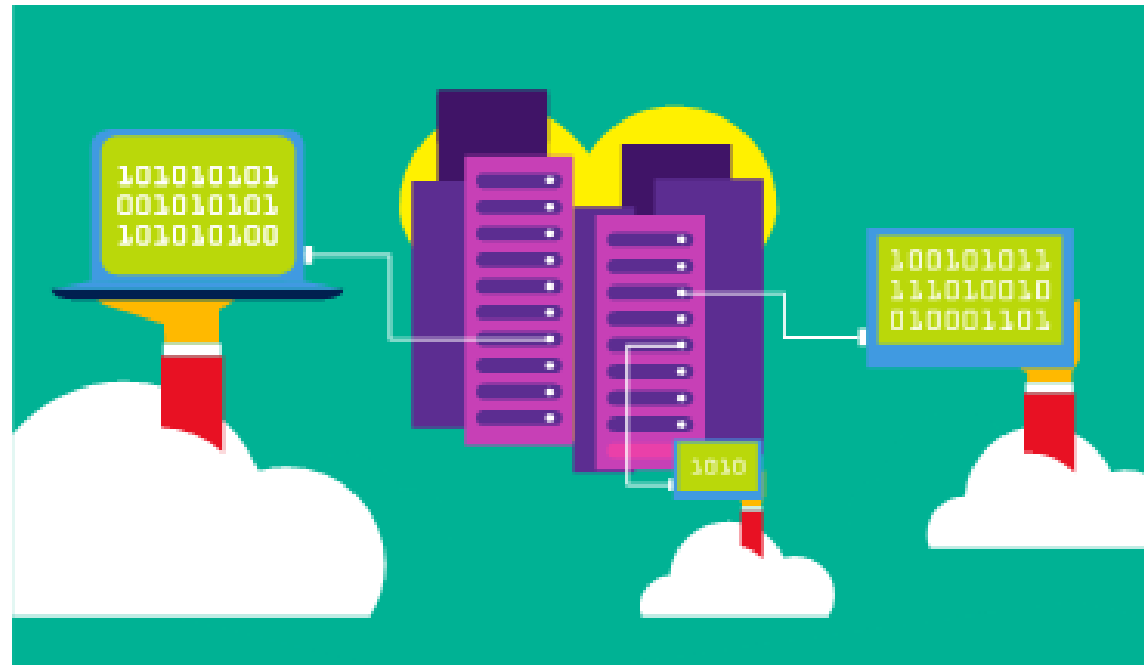
Hybrid cloud

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

Invest
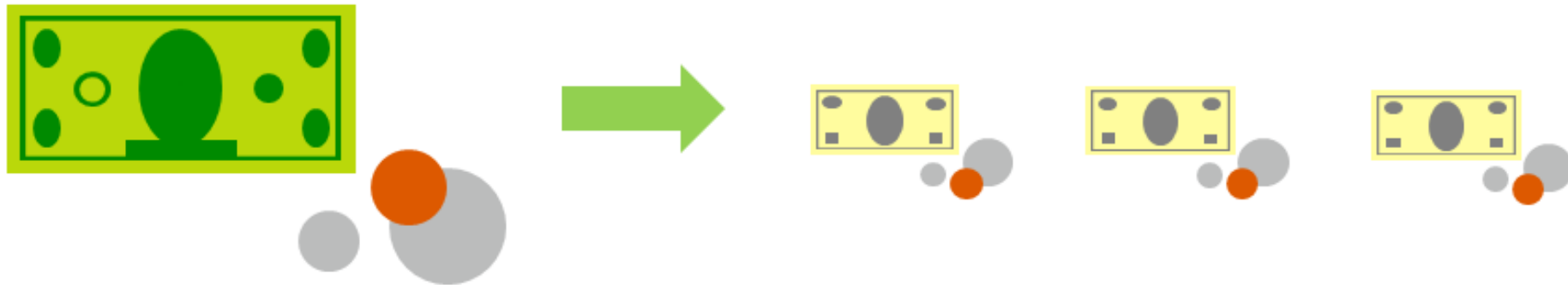
Capital expenditure (CapEx)

Betriebscosten

Operational expenditure (OpEx)

- The upfront spending of money on physical infrastructure.

- Costs from CapEx have a value that reduces over time.

- 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

Cloud benefits

High availability	Elasticity
Scalability	Reliability
Predictability	Security
Governance	Manageability

Cloud service types

Infrastructure as a service (IaaS)

IaaS

Servers and storage

Networking firewalls/Security

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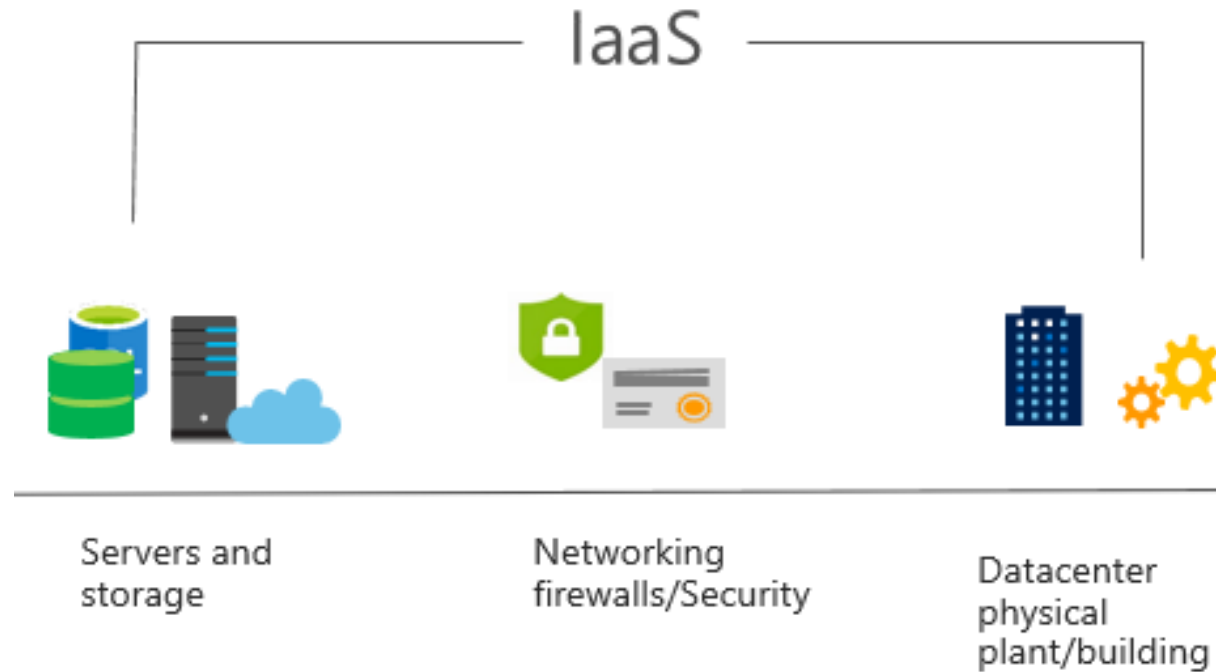
Build pay-as-you-go IT infrastructure by renting servers, virtual machines, storage, networks, and operating systems from a cloud provider.

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)

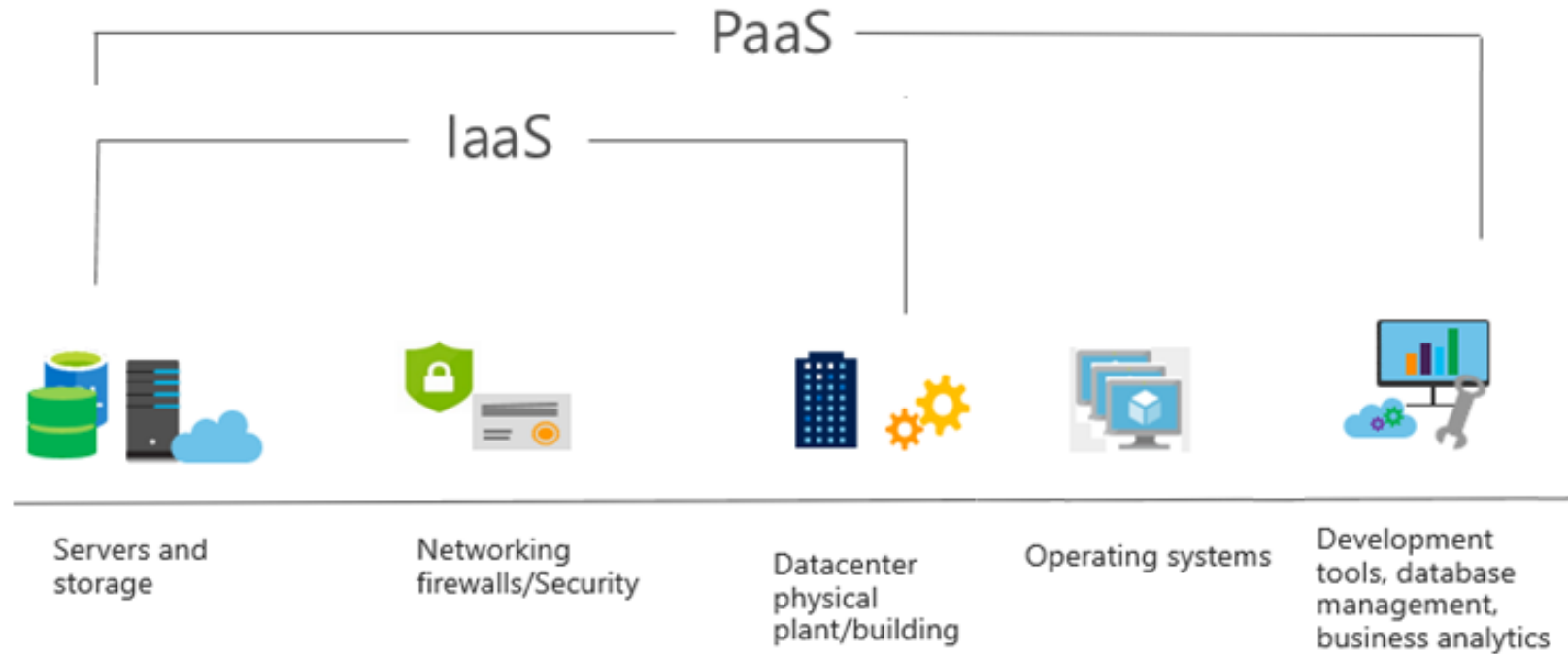|	SaaS				
	PaaS				
	IaaS				
Servers and storage	Networking firewalls/Security	Datacenter physical plant/building	Operating systems	Development tools, database management, business analytics	Hosted applications/apps
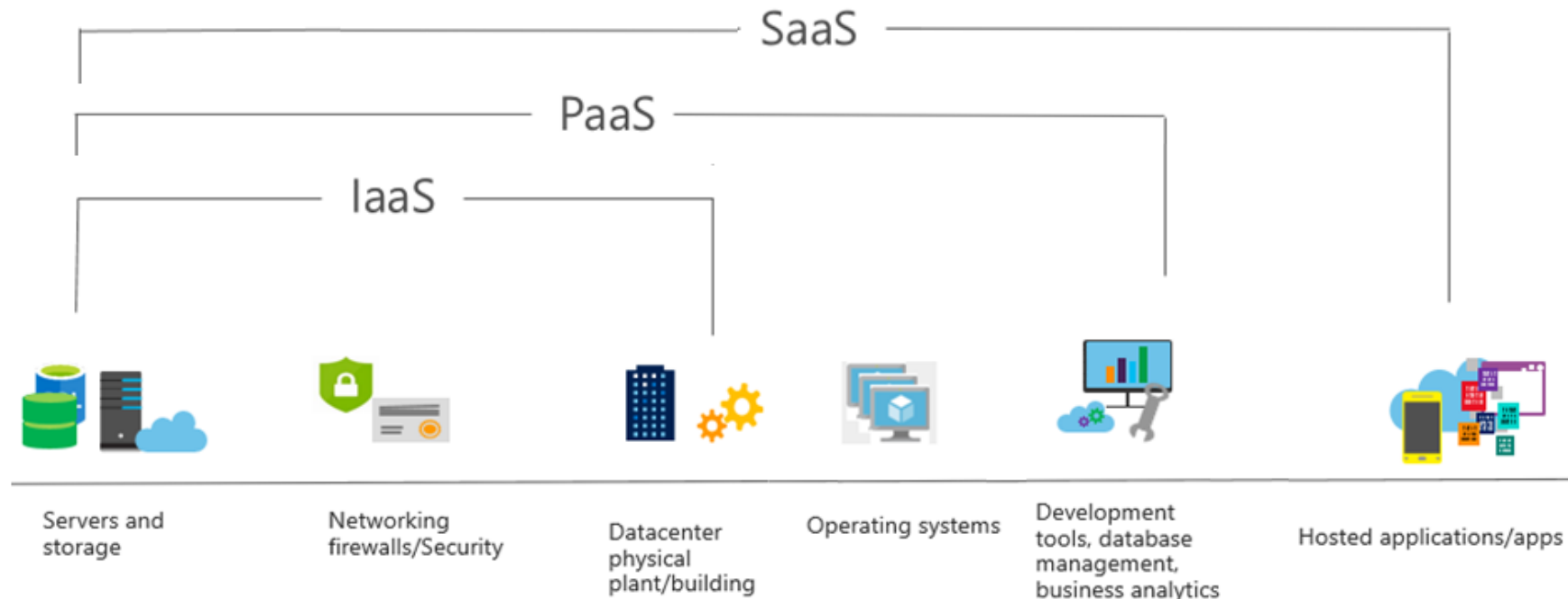
Users connect to and use cloud-based apps over the internet: for example, Microsoft Office 365, email, and calendars.

Shared responsibility model
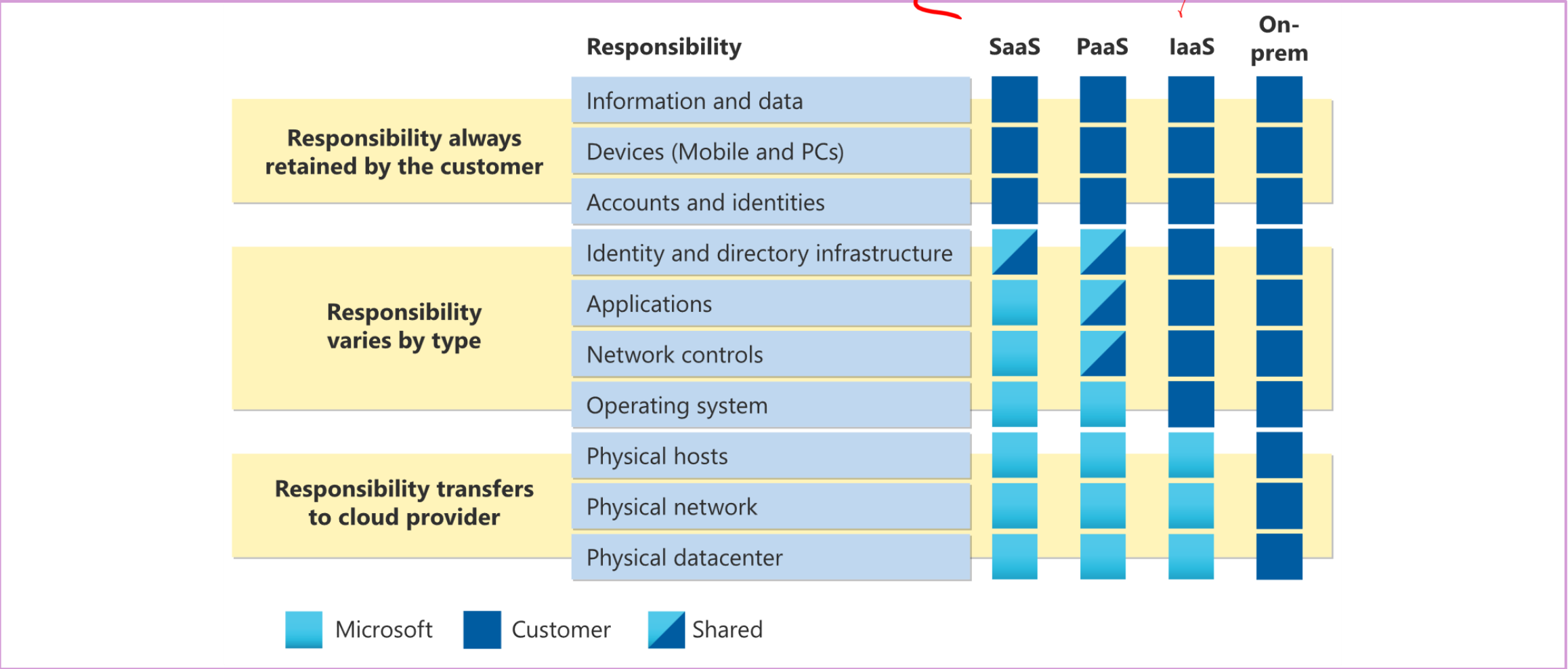
Responsibility		SaaS	PaaS	IaaS	On-prem
Responsibility always retained by the customer	Information and data	Customer	Customer	Customer	Customer
	Devices (Mobile and PCs)	Customer	Customer	Customer	Customer
	Accounts and identities	Customer	Customer	Customer	Customer
Responsibility varies by type	Identity and directory infrastructure	Shared	Shared	Customer	Customer
	Applications	Microsoft	Shared	Customer	Customer
	Network controls	Microsoft	Shared	Customer	Customer
	Operating system	Microsoft	Microsoft	Customer	Customer
Responsibility transfers to cloud provider	Physical hosts	Microsoft	Microsoft	Microsoft	Customer
	Physical network	Microsoft	Microsoft	Microsoft	Customer
	Physical datacenter	Microsoft	Microsoft	Microsoft	Customer

Legend: ▢ Microsoft ▢ Customer ▢ Shared

Cloud service comparison

IaaS

- The most flexible cloud service.
- You configure and manage the hardware for your application.
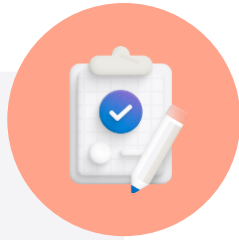
PaaS

- Focus on application development.
- Platform management is handled by the cloud provider.

SaaS

- Pay-as-you-go pricing model.
- Users pay for the software they use on a subscription model.

Learning path 01 review

**Microsoft Learn Modules
(learn.microsoft.com/training)**

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