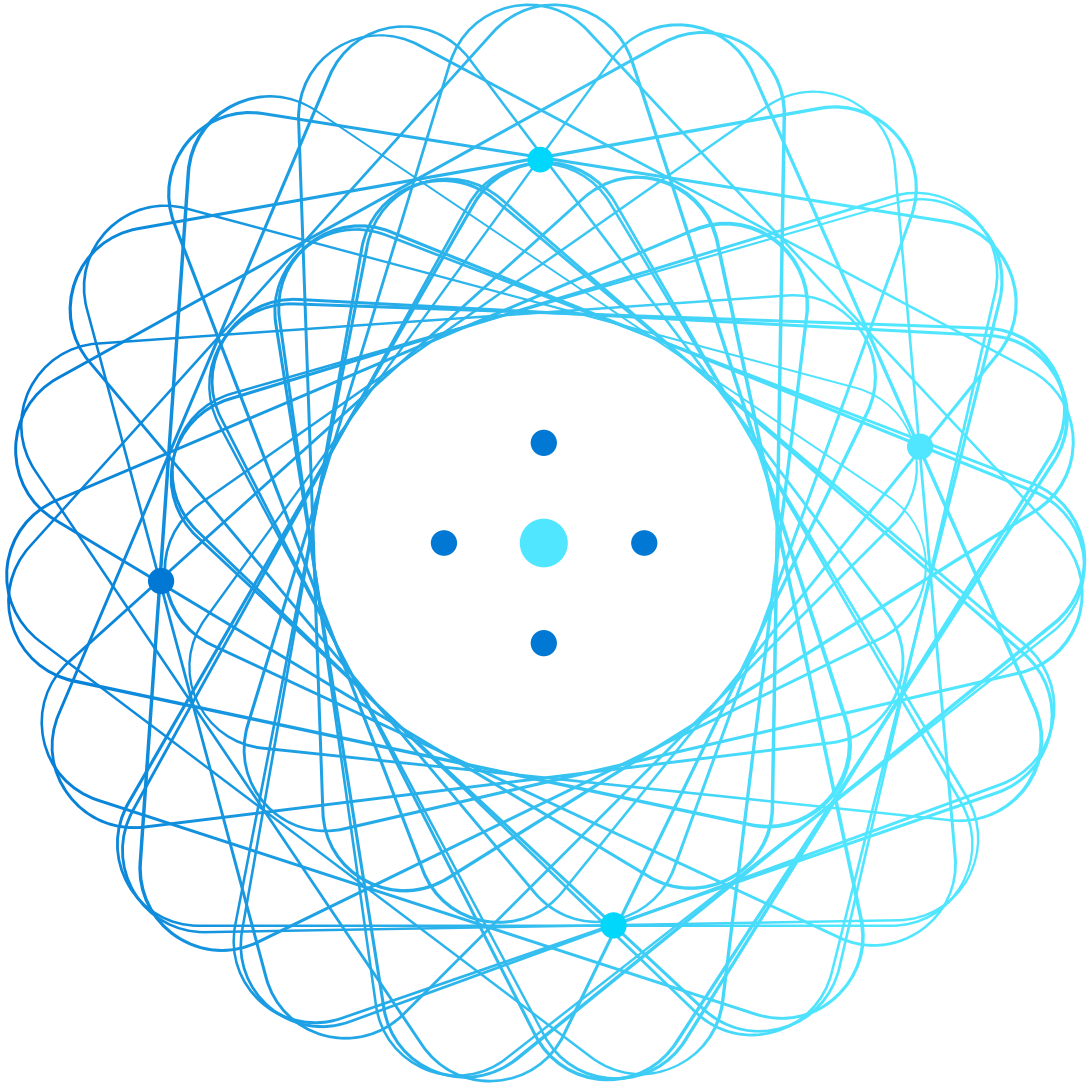
Microsoft Azure

AZ-900T00 Learning Path 01: Cloud concepts



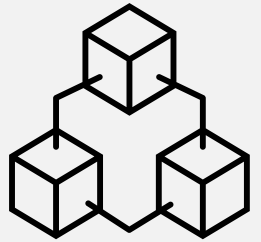
Learning Path Outline

Learning Path 01 - Outline

You will learn the following concepts:

- **Cloud Computing**
  - What is cloud computing
  - Shared responsibility
  - Capital vs Operational costing
- **Cloud Service Types**
  - IaaS, PaaS, and SaaS
- **Cloud Models**
  - Public, Private, Hybrid
- **Cloud Benefits**
  - Benefits of the cloud

Cloud Computing

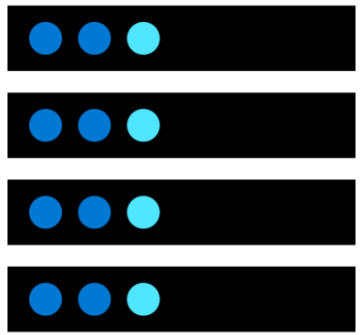


Cloud computing - Objective Domain

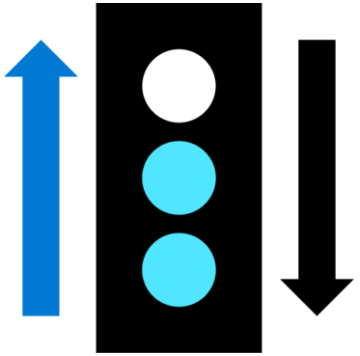
- Define cloud computing
- Define cloud models, including public, private, and hybrid
- Identify appropriate use cases for each cloud model
- Describe the consumption-based model
- Compare cloud pricing models

What is cloud computing?

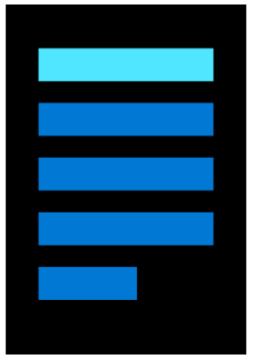
Cloud Computing is the delivery of computing services over the internet, enabling faster innovation, flexible resources, and economies of scale.



Compute



Networking



Storage

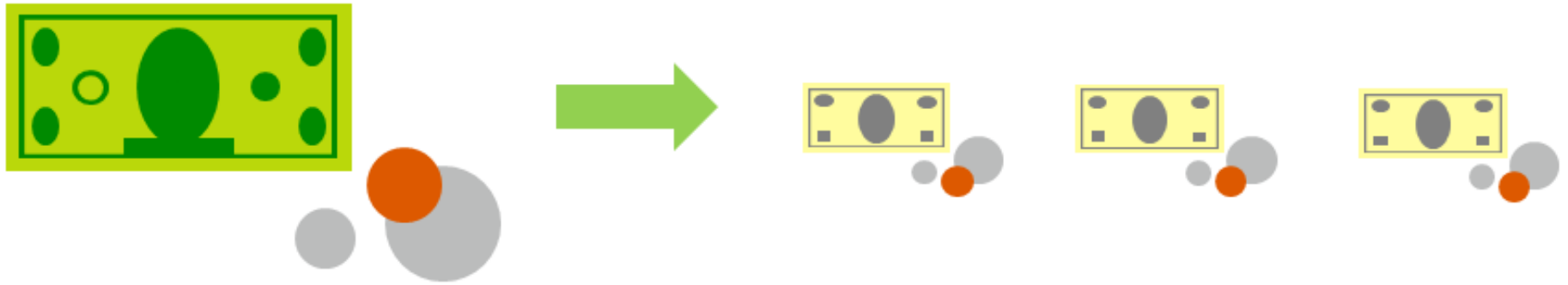
Compare CapEx vs. OpEx

Capital Expenditure (CapEx)

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

Operational Expenditure (OpEx)

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



Cloud Characteristics

Characteristics of Cloud computing that distinguish it from **traditional hosting**.

➔ **Remotely hosted**: Services or data are hosted on remote infrastructure.

➔ **Ubiquitous**: Services or data are available from anywhere through internet.

➔ **Resiliency**: Cloud providers generally mirrors solutions to multiple data centers to minimize downtime in the event of a disaster.

➔ **On-demand self-service**: A consumer can himself provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service's provider. It is sold on demand mostly by the minutes or hours. (Pay as you go model)

Cloud Characteristics Cont…

➔ **Rapid elasticity** – A user can utilize as much or little of the cloud service as required. For example resources (ex: webservers) on the cloud can be scaled to meet high traffic in peak times or scaled down in times of less traffic.

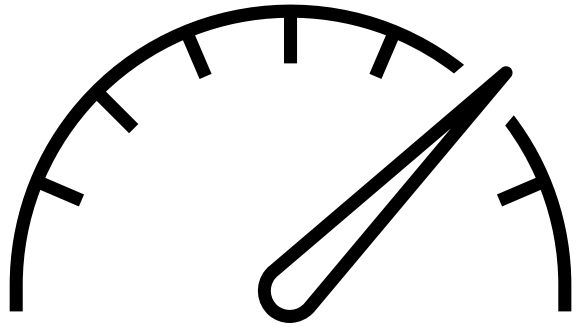
➔ **Broad network access**. Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, laptops, and PDAs).

➔ **Fully managed by the provider / It's current** - The user is abstracted from the details of how the service is managed in the cloud. For example the user need not worry about aspects such as hardware used, software updates and patches, plug-ins, web security. There is optimum utilization of resources and as well as sharing of resources. Everything is taken care of by the provider.

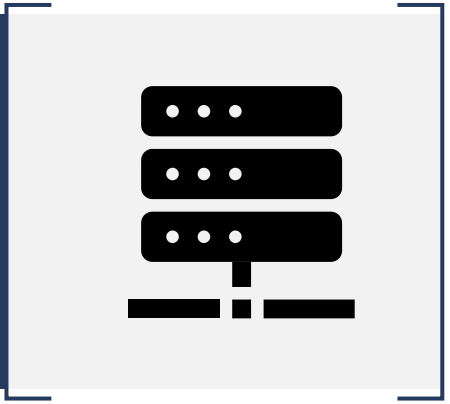
Consumption-based model

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

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



Cloud service types

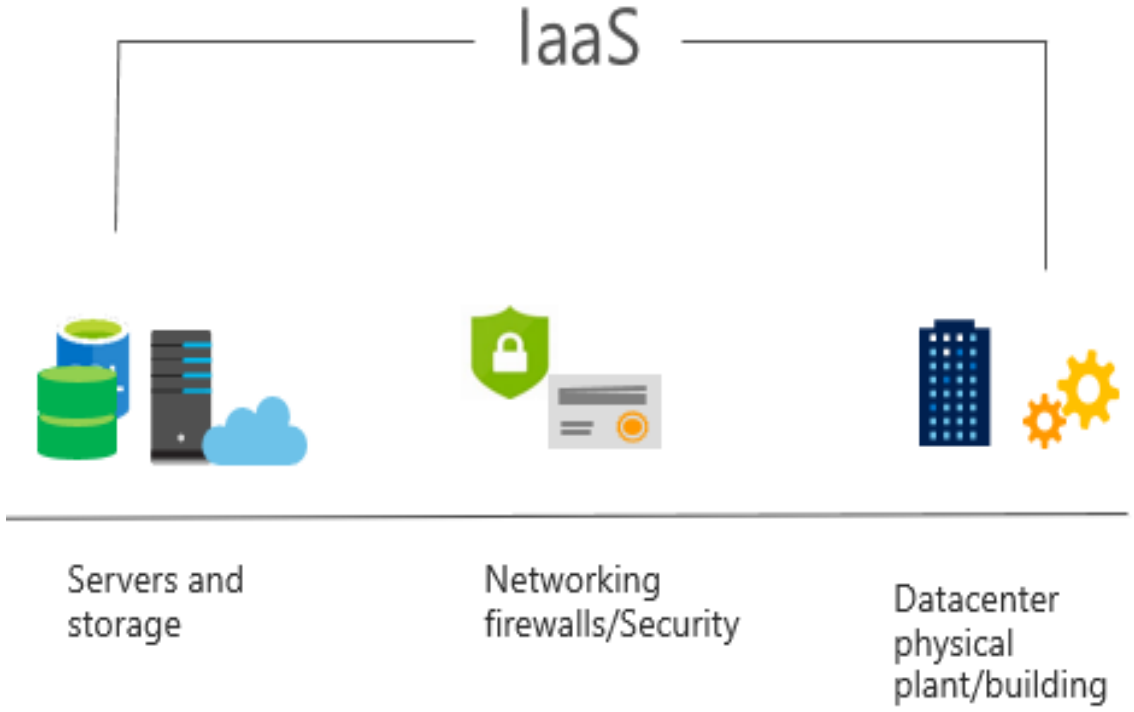


Cloud Services - Objective Domain

- Describe Infrastructure as a Service (IaaS)
- Describe Platform as a Service (PaaS)
- Describe Software as a Service (SaaS)
- Describe the shared responsibility model
- Identify appropriate use cases for each cloud service (IaaS, PaaS, SaaS)

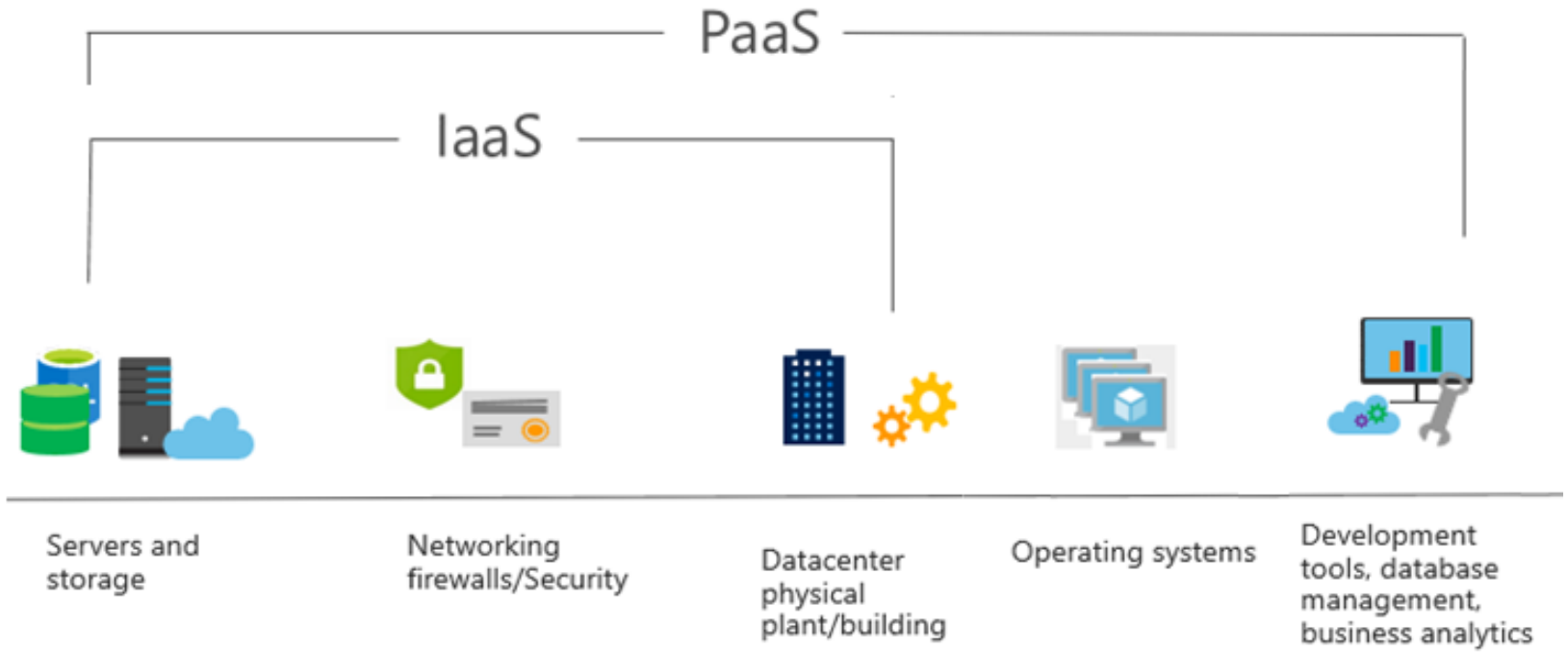
Infrastructure as a Service (IaaS)

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



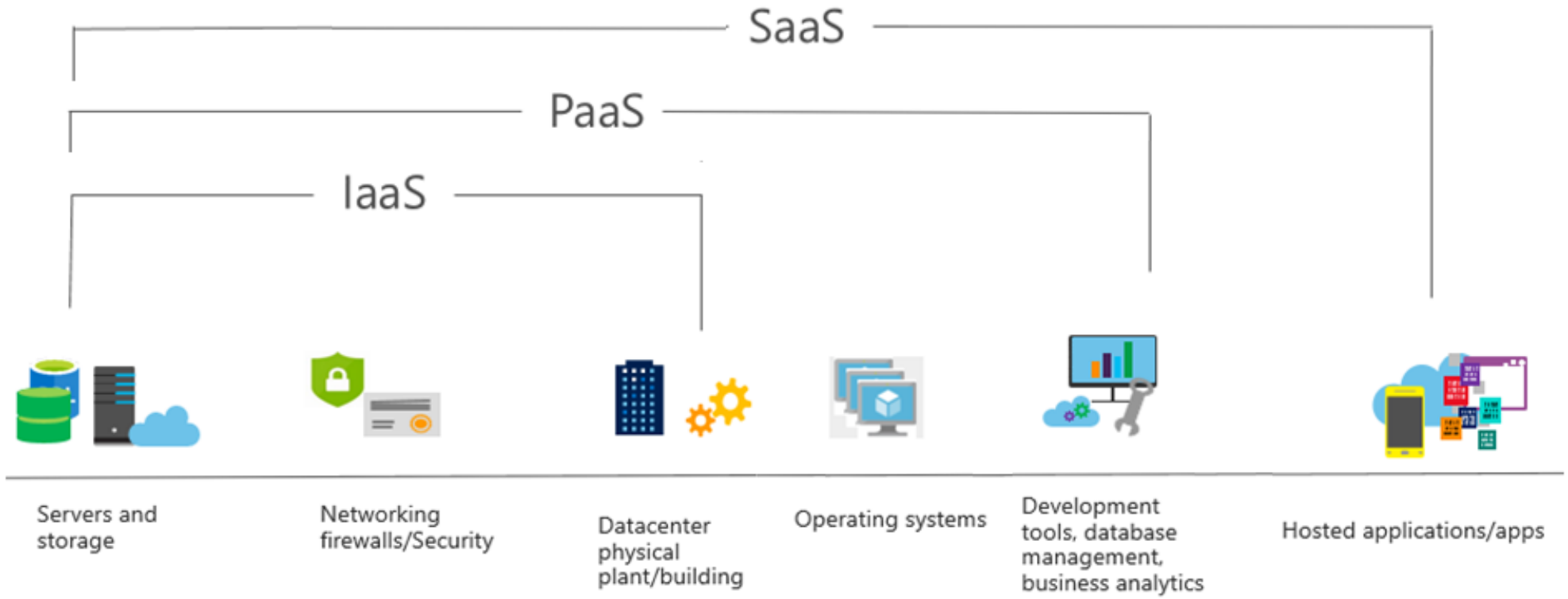
Platform as a Service (PaaS)

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

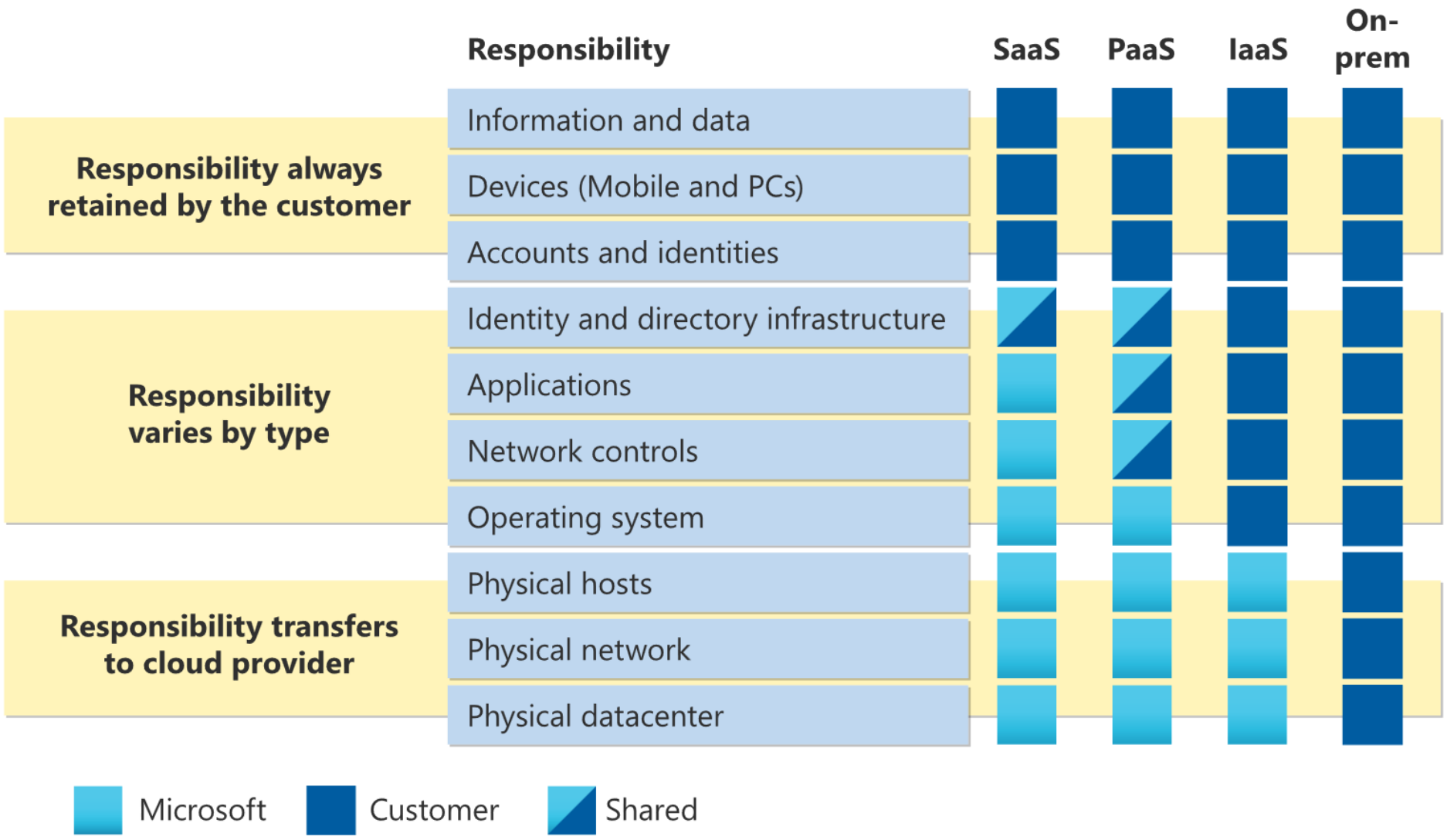


Software as a Service (SaaS)

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



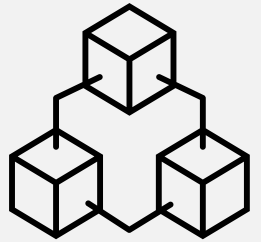
Shared responsibility model



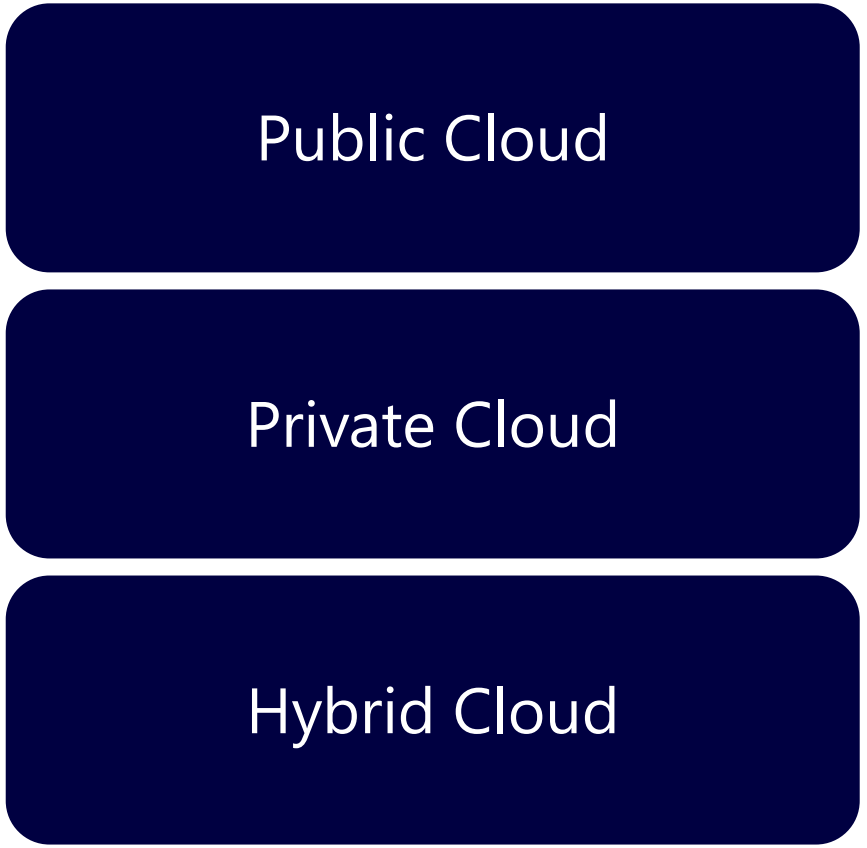
Cloud service comparison

IaaS	PaaS	SaaS
The most flexible cloud service.	Focus on application development.	Pay-as-you-go pricing model.
You configure and manage the hardware for your application.	Platform management is handled by the cloud provider.	Users pay for the software they use on a subscription model.

Cloud Models

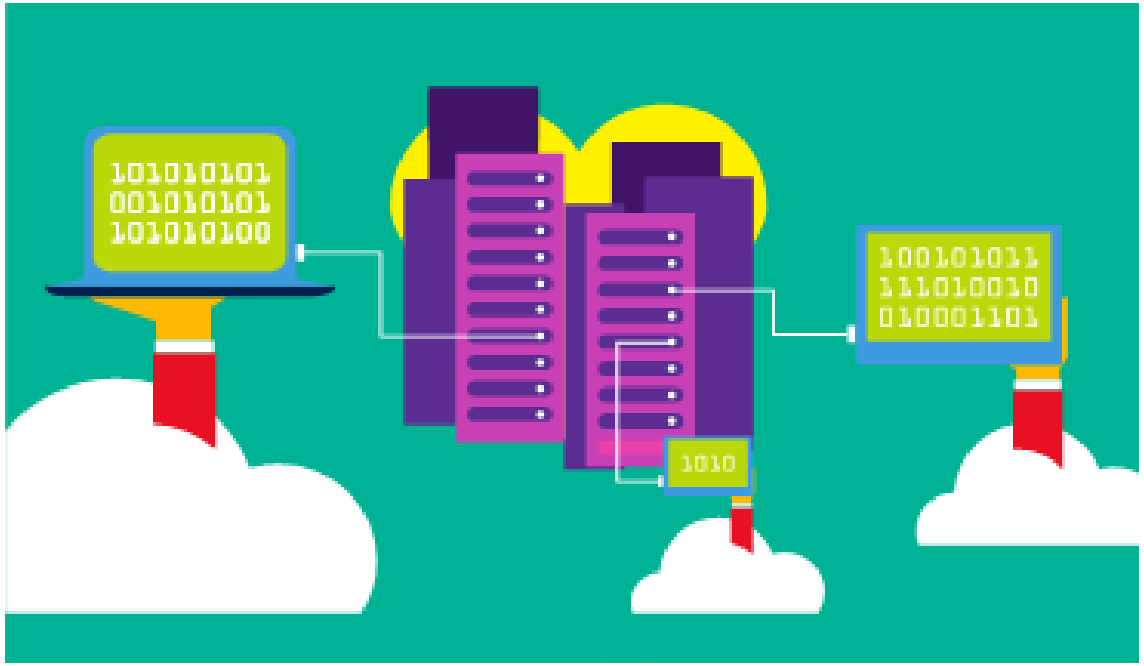


Deployment Models In Cloud Computing



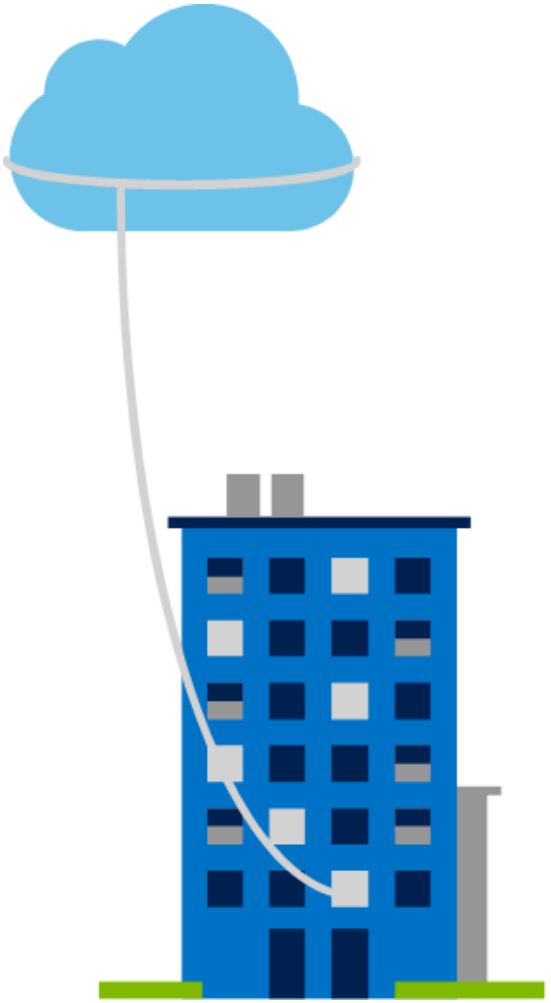
Public cloud

- 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).

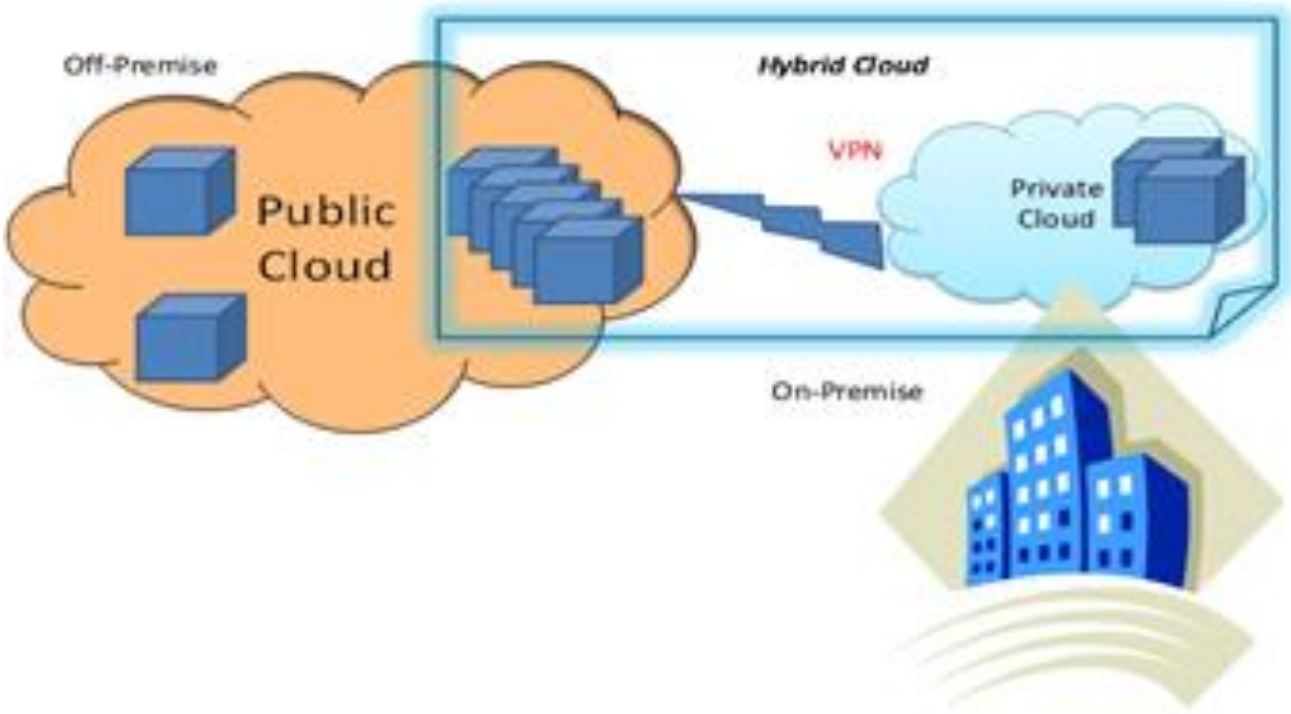


Private cloud

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



Hybrid cloud

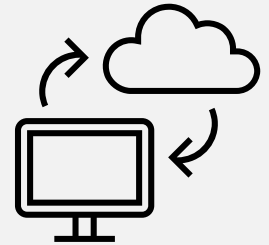


Combines **Public** and **Private** clouds to allow applications to run in the most appropriate location.

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.

Cloud benefits



Cloud Advantages

1. It's cost-effective because of Pay-as-you-go or consumption-based pricing model.
2. Improved Performance as its scalable both vertical and horizontal scaling.
3. Reduced Software Cost and Instant Software Updates.
4. Unlimited Storage Capacity because of virtualization.
5. Universal Document Access as cloud providers have fully-redundant datacenters spread over the world.
6. Increased data reliability. Cloud computing providers offer data backup, disaster recovery, and data replication services to make sure your data is always safe.
7. It's Secure in both aspects – Physical security and Digital Security.

Limitations of Public Cloud

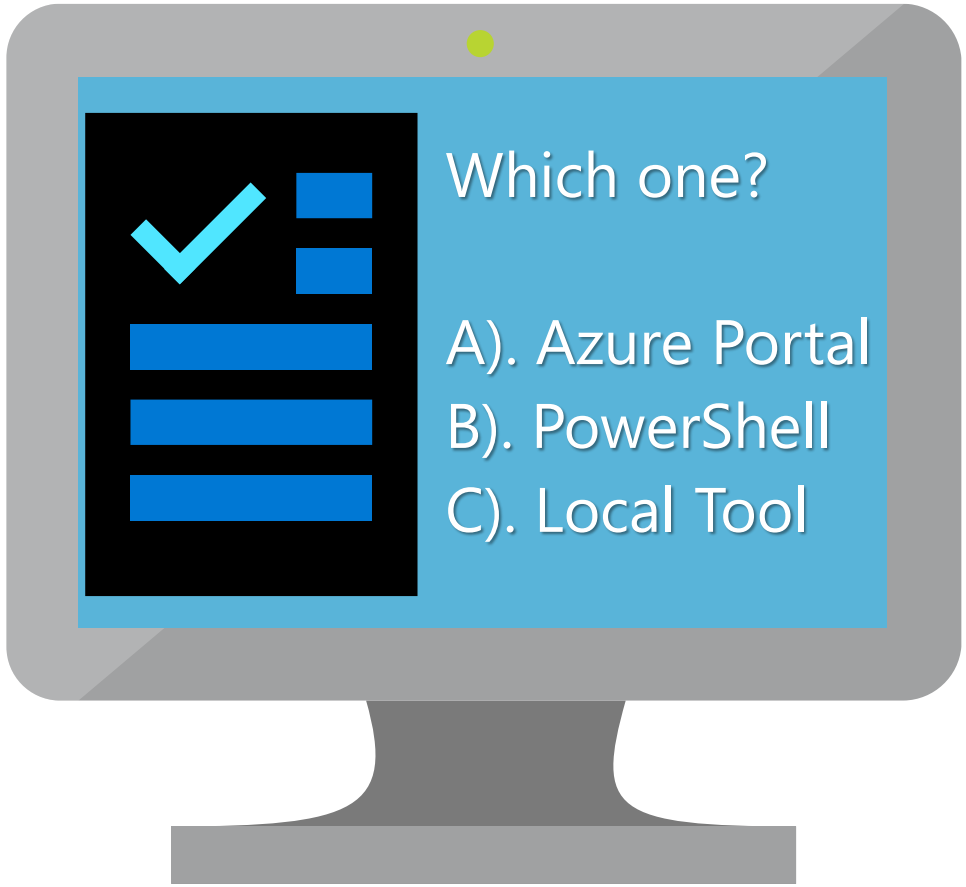
1. Requires a constant Internet connection.
2. Does not work well with low-speed connections.
3. Features might be limited based on provider you choose.
4. Can be slow.
5. Stored data might not be secure.
6. **If your data is stored abroad whose policy do you adhere to?**

Knowledge Check

Populate with instructions to use the polling tool of your choice

Learning Path 1

1. Use your Smartphones or Mobile Devices
2. Go to *(insert polling app link of your choice)*
3. Enter Code: 123-45-678
4. Please participate in the quiz for this section



Learning Path 01 Review

Microsoft Learn Modules
(docs.microsoft.com/Learn)

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