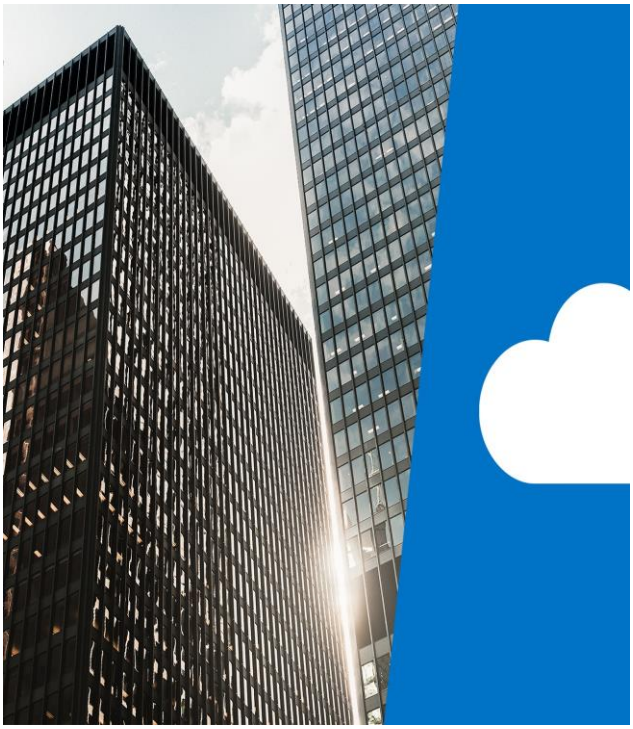
Microsoft

AZ-900T01: Module 01: Cloud concepts



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Lesson 01: Learning objectives

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Module 1 – Learning objectives

- Describe and understand cloud services and their benefits
- Understand key terms you will encounter when working with cloud services
- Understand public, private, and hybrid cloud models
- Understand infrastructure as a service (IaaS)
- Understand platform as a service (PaaS)
- Understand software as a service (SaaS)

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Lesson 02: Why cloud services?

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Video: Cloud Services

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Key concepts and terms

- Cloud services have certain characteristics and considerations, such as:
  - High availability
  - Scalability
  - Elasticity
  - Agility
  - Fault tolerance
  - Disaster recovery
  - Global reach
  - Customer latency capabilities
  - Predictive cost considerations
  - Security

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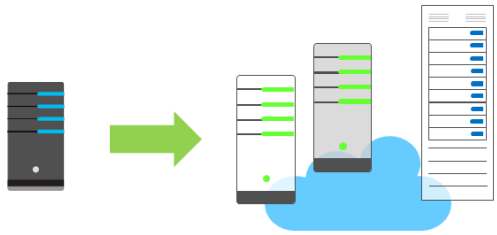
Economies of scale

- The concept of *economies of scale* is the ability to do things less expensively and more efficiently when operating at a larger scale in comparison to operating at a smaller scale.



- Cloud providers such as Microsoft, Google, and Amazon Web Services (AWS) are very large businesses, and thus can leverage the benefits of economies of scale and then pass those benefits on to their customers.

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CapEx vs. OpEx

- *Capital Expenditure (CapEx)* is the spending of money on physical infrastructure up front, and then deducting that expense from your tax bill over time. CapEx is an upfront cost which has a value that reduces over time.
- *Operational Expenditure (OpEx)* is spending money on services or products and being billed for them immediately. You can deduct this expense from your tax bill in the same year. There is no upfront cost, you pay for a service or product as you use it.

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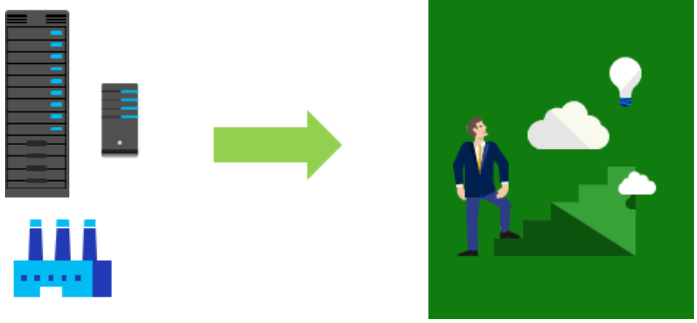
Consumption-based model

Users only pay for the resources they use



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Lesson 03: Types of cloud models

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Video: Cloud Models

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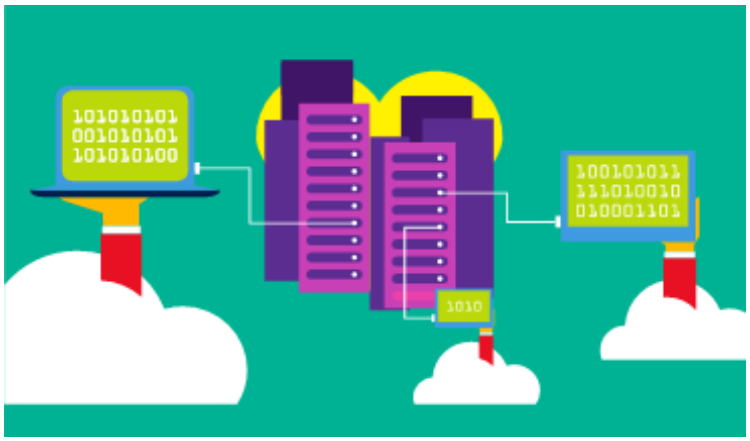

Public cloud

A *public cloud* is owned by a cloud services provider (also known as a *hosting provider*). It provides resources and services to multiple organizations and users who connect to the cloud service via a secure network connection, typically over the internet

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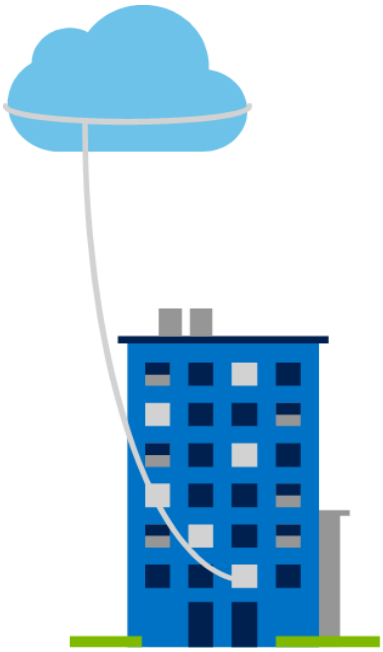
Private cloud

A *private cloud* is owned and operated by the organization that uses the resources from that cloud. They create a cloud environment in their own datacenter and provide self-service access to compute resources to users within their organization. The organization remains the owner, entirely responsible for the operation of the services they provide.



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A *hybrid cloud* combines both public and private clouds, allowing you to run your applications in the most appropriate location

Hybrid cloud

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Cloud model comparison

Public cloud:

- No CapEx. You don't have to buy a new server to scale up.
- Agility. Applications can be made accessible quickly, and deprovisioned whenever needed.
- Consumption-based model. Organizations pay only for what they use, and operate under an OpEx model.

Private cloud:

- Control. Organizations have complete control over resources.
- Security. Organizations have complete control over security.

Hybrid cloud:

- Flexibility. The most flexible scenario. With a hybrid cloud setup, an organization can determine whether to run their applications in a private cloud or in a public cloud.
- Compliance. Organizations maintain the ability to comply with strict security, compliance, or legal requirements as needed.

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Lesson 04: Types of cloud services

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Video: Cloud Services

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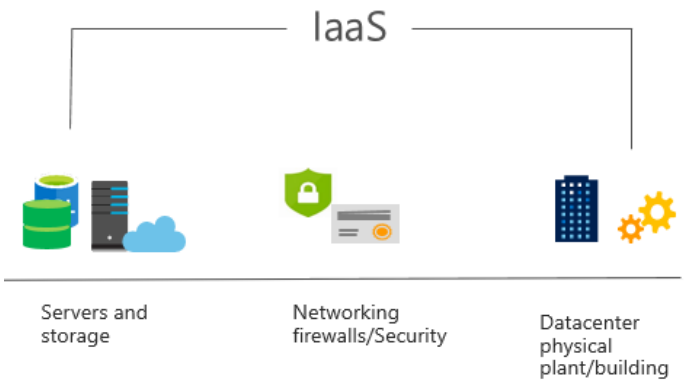
IaaS

IaaS is the most basic category of cloud computing services. With IaaS, you rent IT infrastructure servers, and virtual machines (VMs), storage, networks, and operating systems from a cloud provider on a pay-as-you-go basis. It's an instant computing infrastructure, provisioned and managed over the internet.



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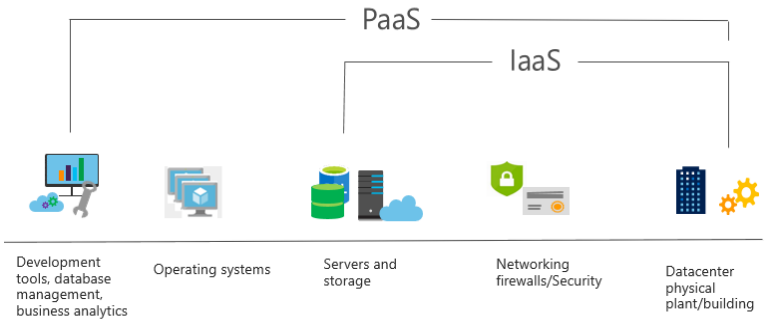

PaaS

PaaS provides an environment for building, testing, and deploying software applications. The goal of PaaS is to help create an application as quickly as possible without having to focus on managing the underlying infrastructure.

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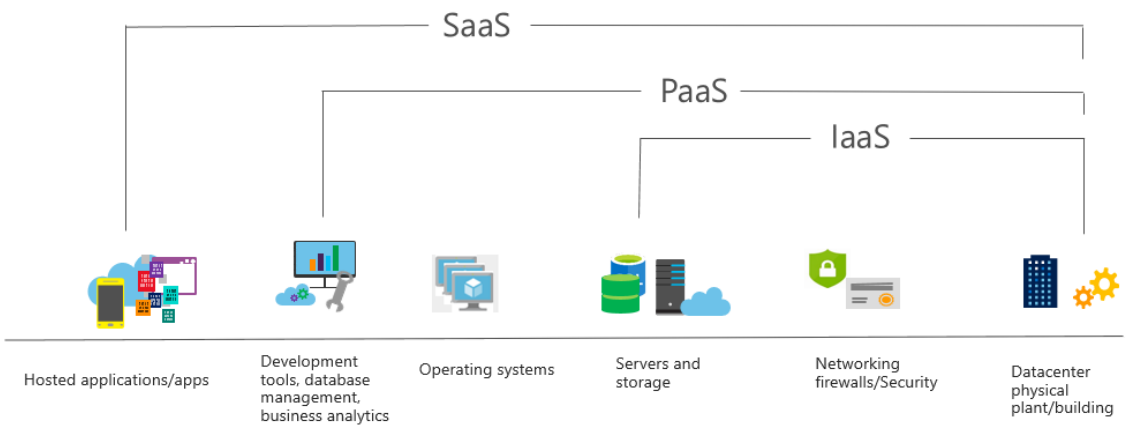

SaaS

SaaS is software that is centrally hosted and managed for the end customer. It allows users to connect to and use cloud-based apps over the internet. Common examples are email, calendars, and office tools such as Microsoft Office 365.

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Cloud service comparison

IaaS: Flexibility. IaaS is the most flexible cloud service as you have control to configure and manage the hardware running your application.

PaaS: Productivity. Users can focus on application development only, as all platform management is handled by the cloud provider. Working with distributed teams as services is easier, as the platform is accessed over the internet and can be made globally available more easily.

SaaS: Pay-as-you-go pricing model. Users pay for the software they use on a subscription model, typically monthly or yearly, regardless of how much they use the software.

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Management responsibilities

- IaaS requires the most user management of all the cloud services. The user is responsible for managing the operating systems, data, and applications.
- PaaS requires less user management. The cloud provider manages the operating systems, and the user is responsible for the applications and data they run and store.
- SaaS requires the least amount of management. The cloud provider is responsible for managing everything, and the end user just uses the software.

Responsibility	On-premises	IaaS	PaaS	SaaS
Data governance and Rights Management	Customer	Customer	Customer	Customer
Client endpoints	Customer	Customer	Customer	Customer
Account and access management	Customer	Customer	Customer	Customer
Identity and directory Infrastructure	Customer	Customer	Microsoft/ Customer	Microsoft/ Customer
Application	Customer	Customer	Microsoft/ Customer	Microsoft
Network controls	Customer	Customer	Microsoft/ Customer	Microsoft
Operating system	Customer	Customer	Microsoft	Microsoft
Physical hosts	Customer	Microsoft	Microsoft	Microsoft
Physical network	Customer	Microsoft	Microsoft	Microsoft
Physical datacenter	Customer	Microsoft	Microsoft	Microsoft

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Lesson 05: Module review questions

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Module 1 review questions

- What would be viewed as benefits of using cloud services?
- Which cloud model provides the greatest degree of flexibility?
- You have two types of applications which you need to run: legacy applications that require specialized mainframe hardware and newer applications that can run on commodity hardware. Which cloud deployment model would be best for you?

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