Microsoft 365 Cloud Concepts

An Introduction to Cloud Computing

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Overview

Introduction to cloud computing

- Advantages of using cloud computing

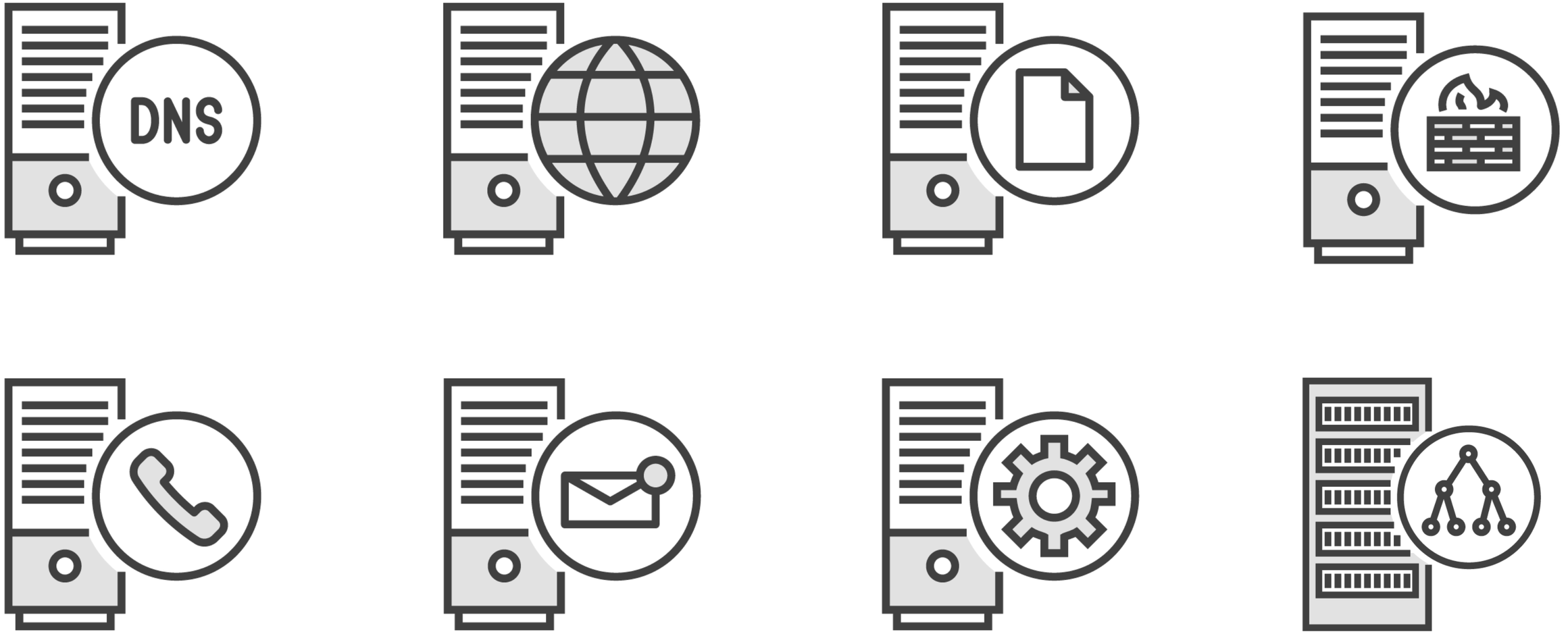
Cloud computing service types

- Infrastructure as a Service
- Platform as a Service
- Software as a Service

Cloud computing deployment models

Introduction to Cloud Computing

Datacenter in the Past



Datacenter in the Past

X Cores
XX GB Ram
XXXX GB HDD

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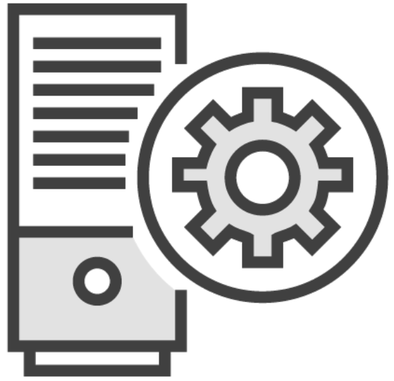

X Cores
XX GB Ram
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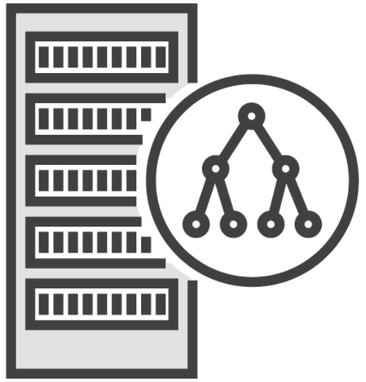
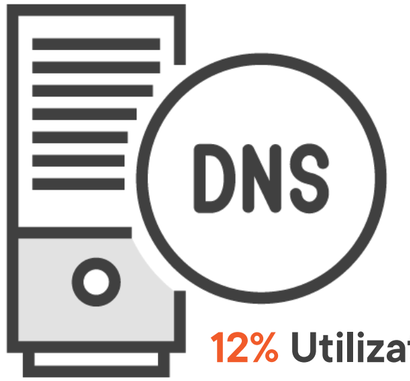


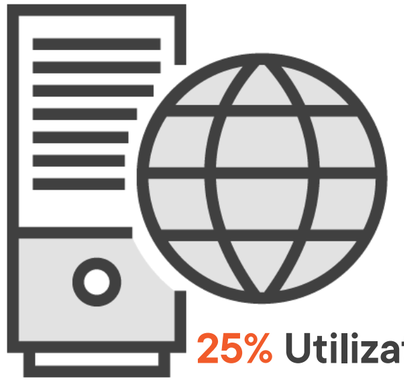
X Cores
XX GB Ram
XXXX GB HDD

Datacenter in the Past



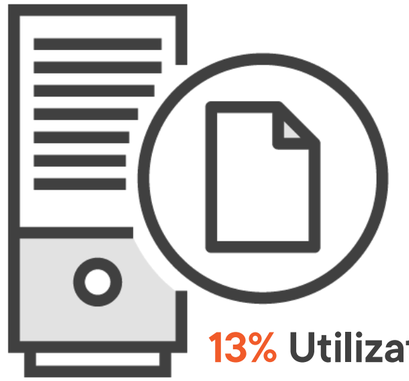
12% Utilization

X Cores
XX GB Ram
XXXX GB HDD



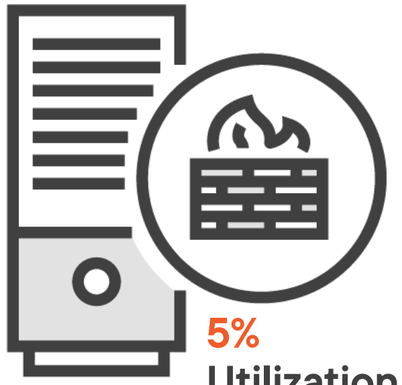
25% Utilization

X Cores
XX GB Ram
XXXX GB HDD



13% Utilization

X Cores
XX GB Ram
XXXX GB HDD



5% Utilization

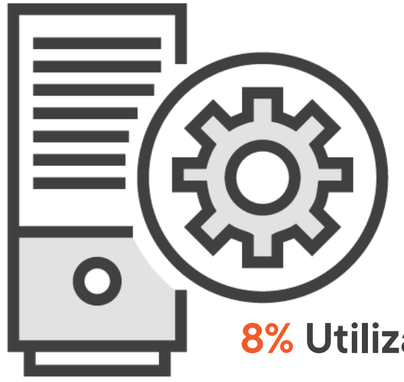
X Cores
XX GB Ram
XXXX GB HDD

30% Utilization

X Cores
XX GB Ram
XXXX GB HDD

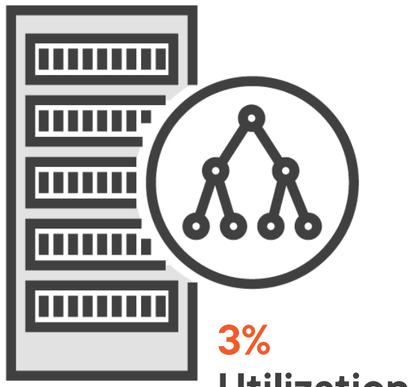
30% Utilization

X Cores
XX GB Ram
XXXX GB HDD



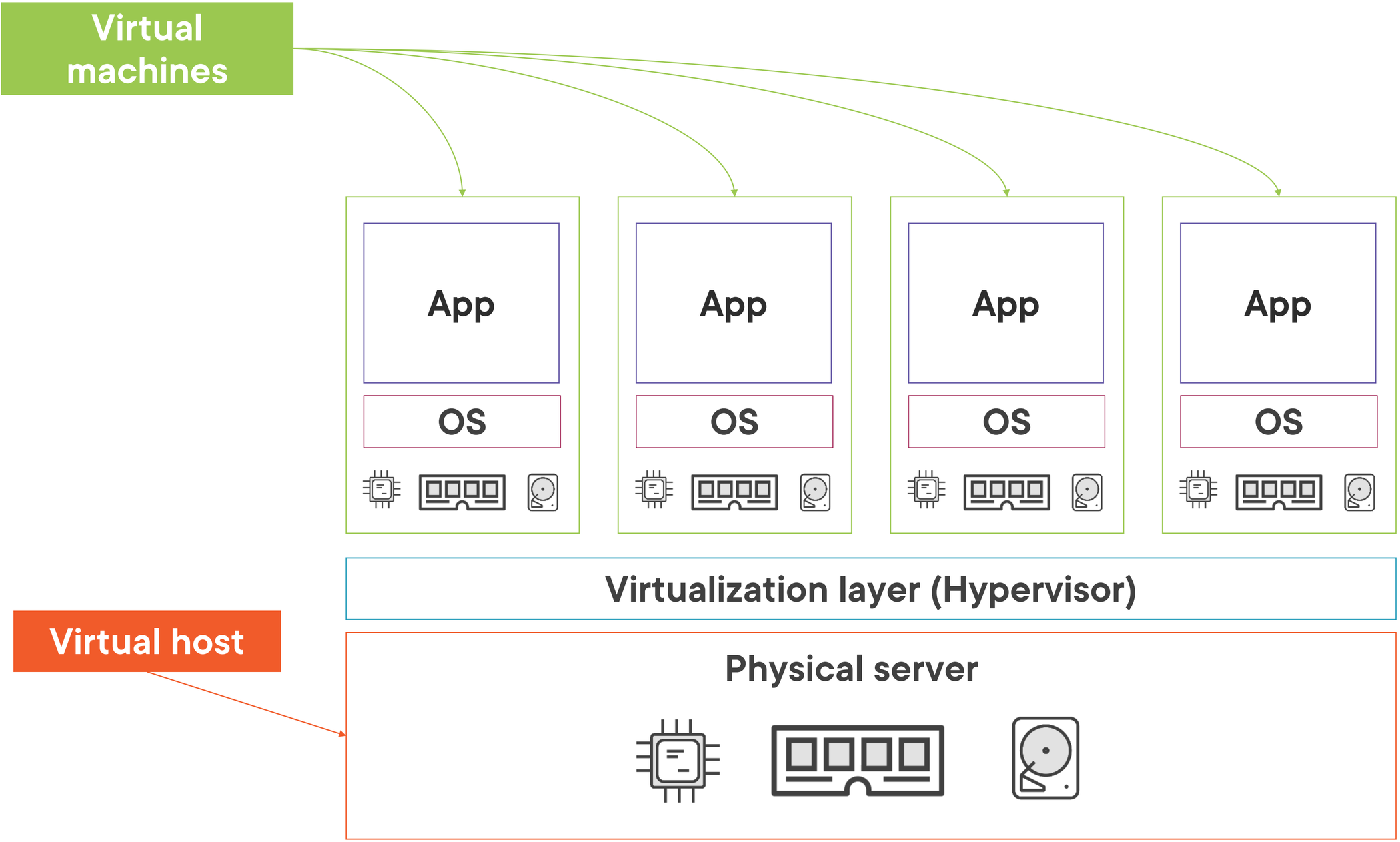
8% Utilization

X Cores
XX GB Ram
XXXX GB HDD



3% Utilization

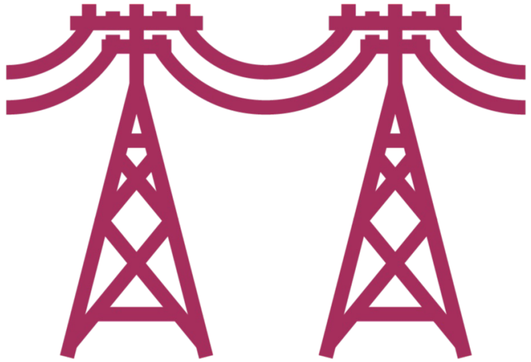
X Cores
XX GB Ram
XXXX GB HDD


Virtual machines
App
OS
App
OS
App
OS
App
OS
Virtualization layer (Hypervisor)
Virtual host
Physical server

Even with Virtualization

High up-front cost

Space needed to host servers



Electricity / utility costs

Hardware maintenance still needed

The Way We Work Has Also Changed

Many employees work remotely

- **Some never even stepped into the company office!**

Field workers need to be connected from anywhere

- **Many don't have access to a traditional computer**

Traditional datacenter model made it difficult to integrate those users

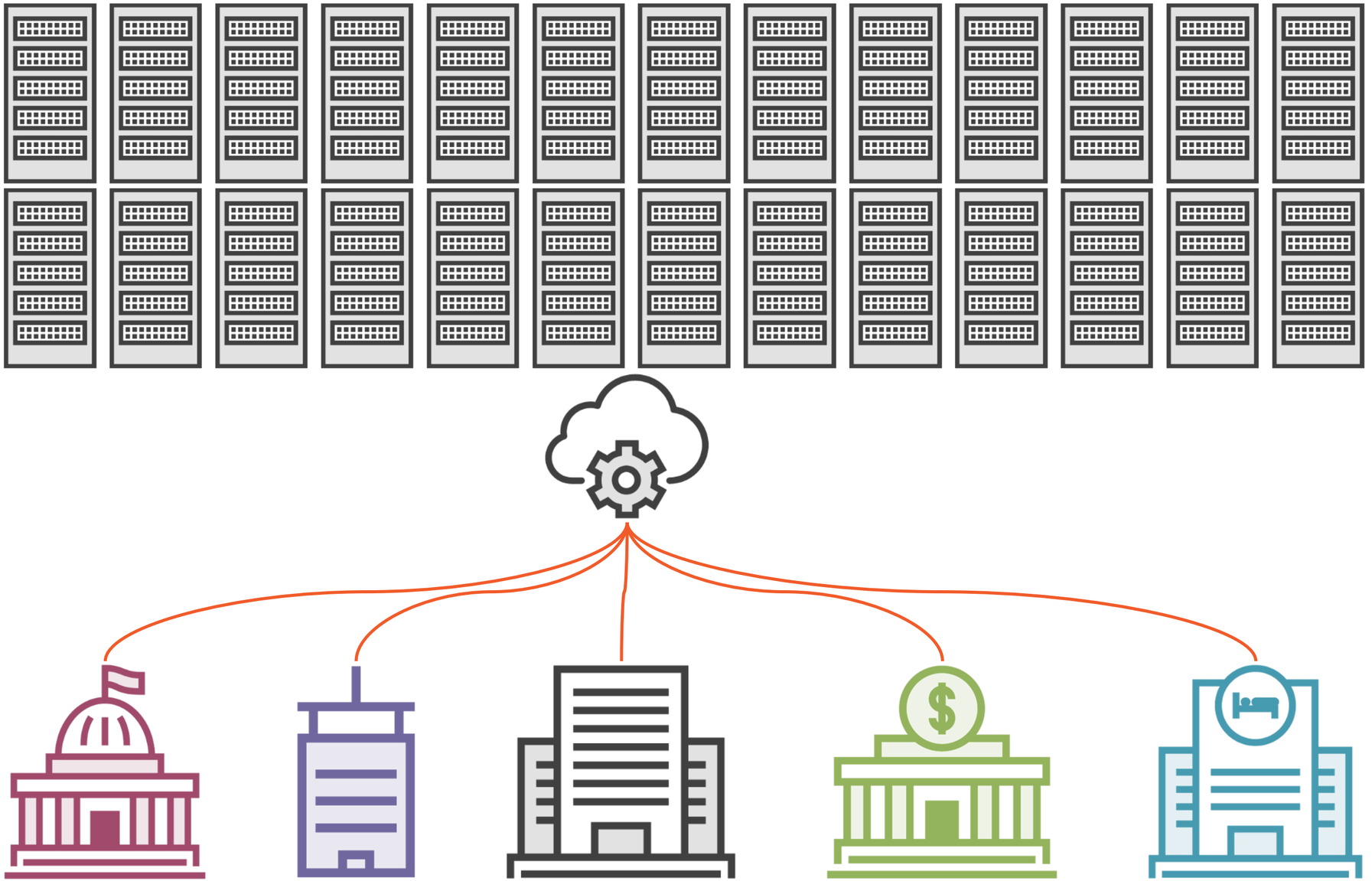
Cloud Computing

Cloud computing enables companies to consume a compute resource, such as a virtual machine, storage, or an application, as a utility -- just like electricity -- rather than having to build and maintain computing infrastructures in-house.

https://searchcloudcomputing.techtarget.com/definition/cloud-computing

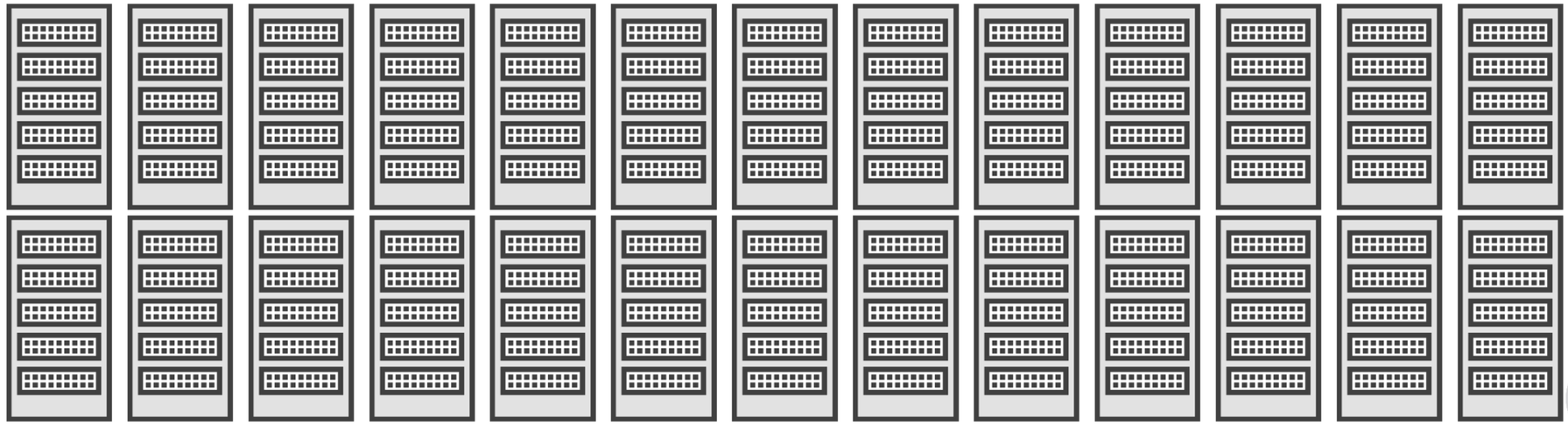
Cloud Infrastructure: Shared Resources

Cloud Provider



Cloud Infrastructure: On-demand Self Service

Cloud Provider



Cloud Infrastructure: Metering

How Much Does the Public Cloud Cost?

Services are billed on-demand, by the minute or by the hour

Allows organizations to create new resources when needed

- And shut them off (and stop paying) when they are not needed anymore

Organizations can be more dynamic and cost-effective

Reduces up-front cost

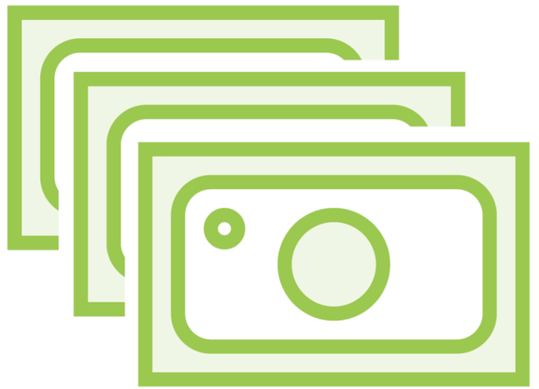
- Cost goes into Operating Expenses (OpEx) instead of Capital Expenditures (CapEx)

CAPEX vs. OPEX Basics

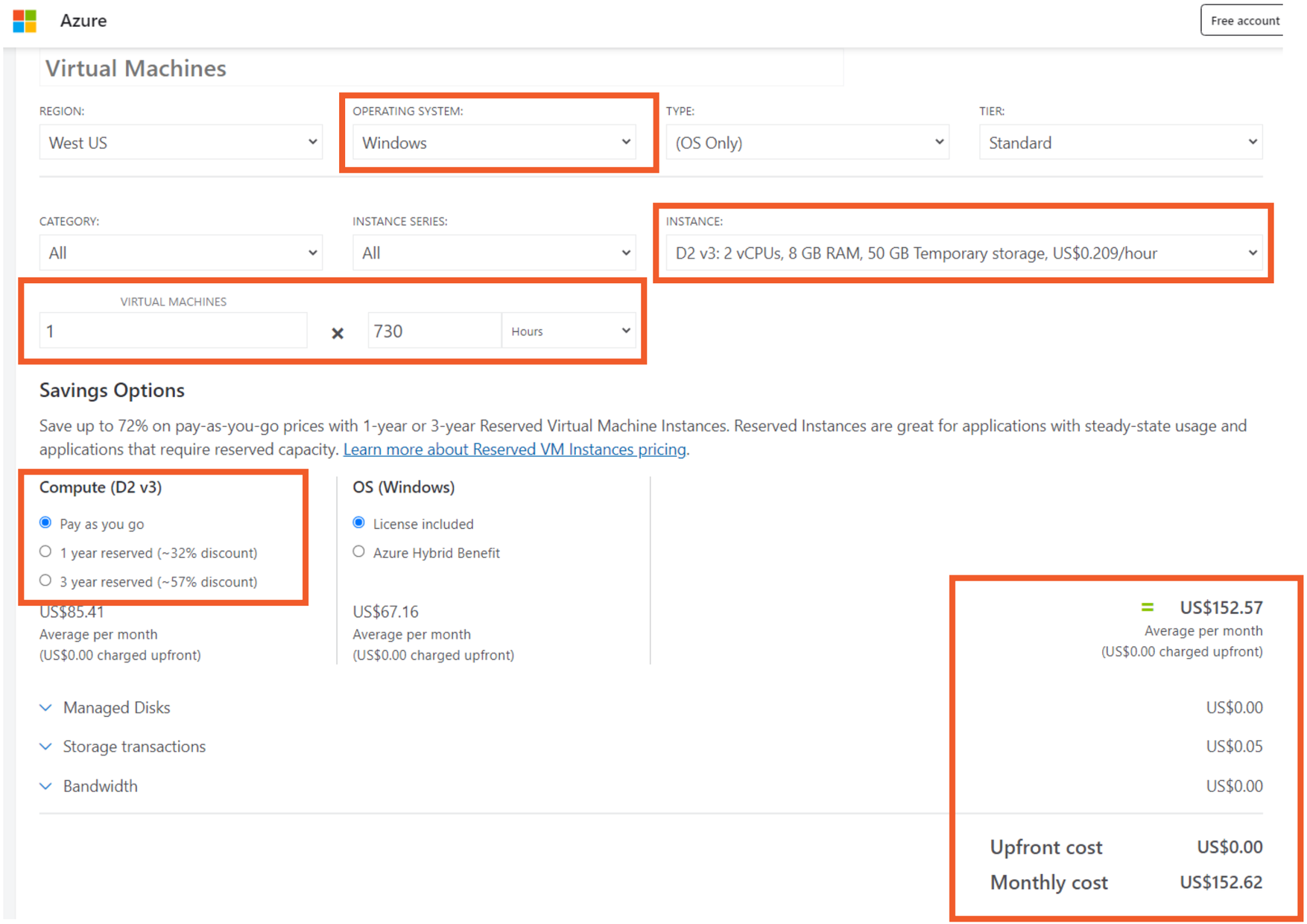
Capital expenditures (CapEx) are deprecated over the useful life of the asset

You cannot fully deduct the cost from the fiscal year the asset was paid for in

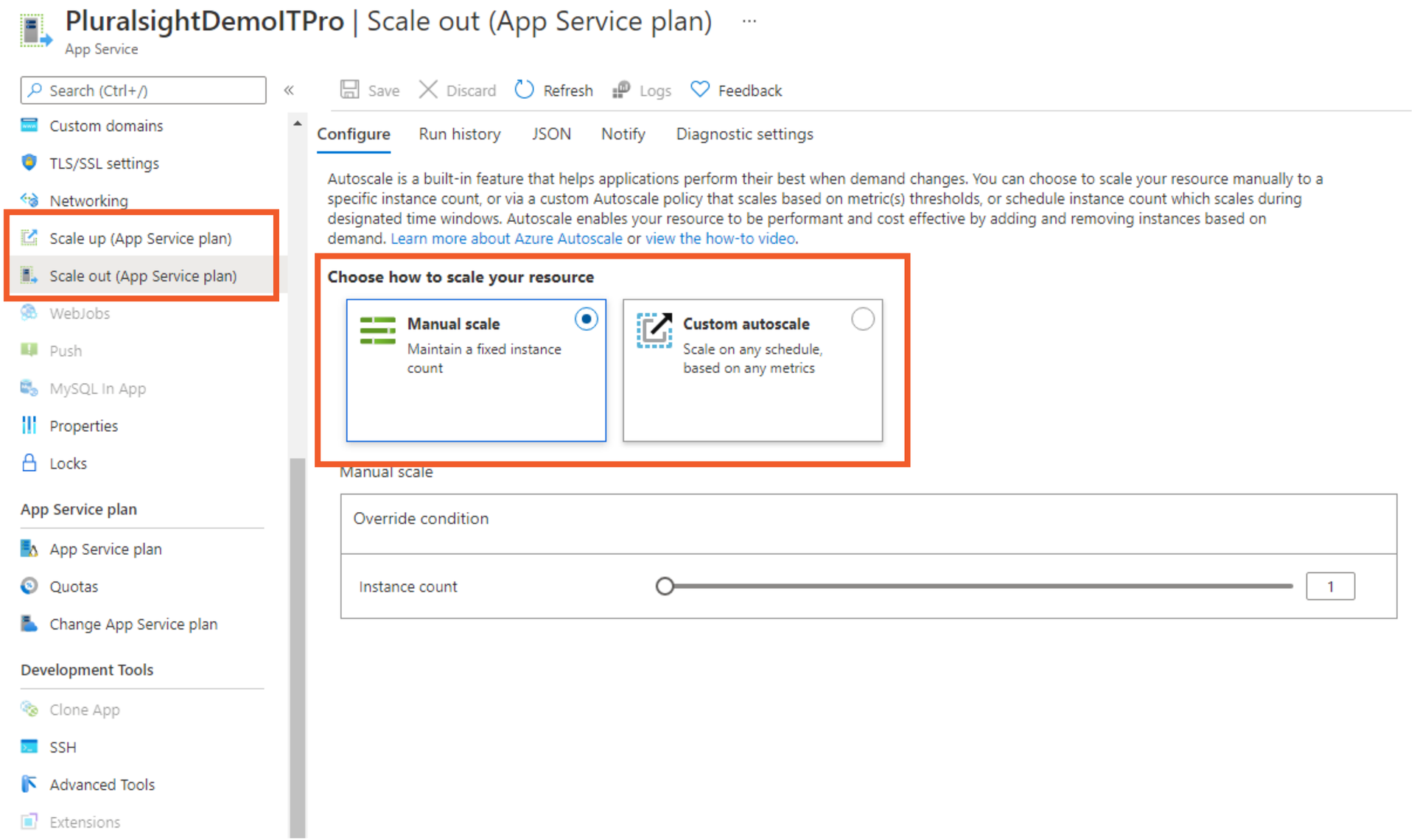
Operating Expenses (OpEx) are deducted in the same year they are made



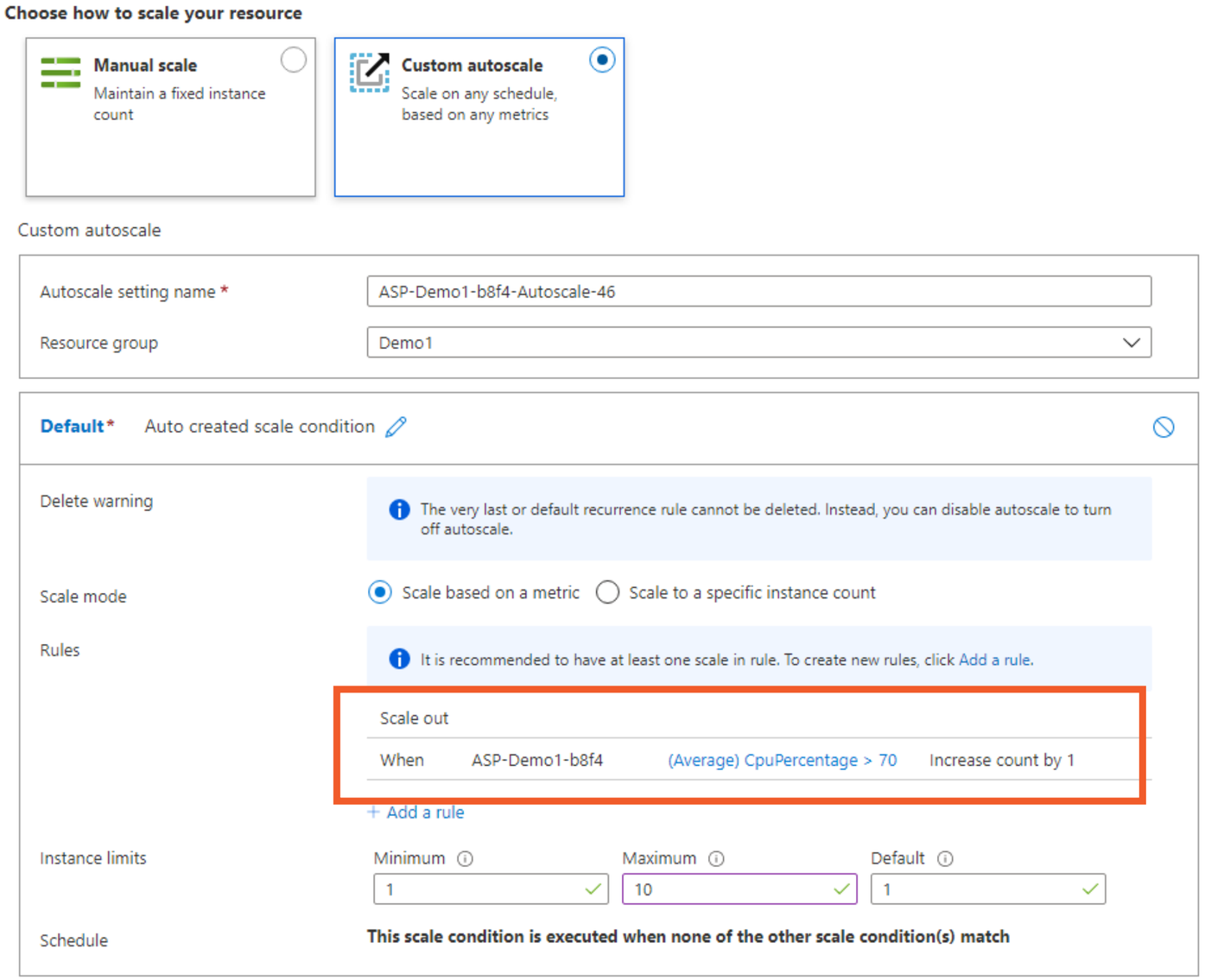
Cost Example: Microsoft Azure



Rapid Elasticity Example



Rapid Elasticity Example



Reliability

Cloud provider takes care of high availability (HA) and disaster recovery (DR)

- HA: local failure such as a disk, power supply, etc.
- DR: natural / human disaster like a fire, flood, earthquake, etc.

Fault Tolerance

- Very similar to HA but offers zero downtime

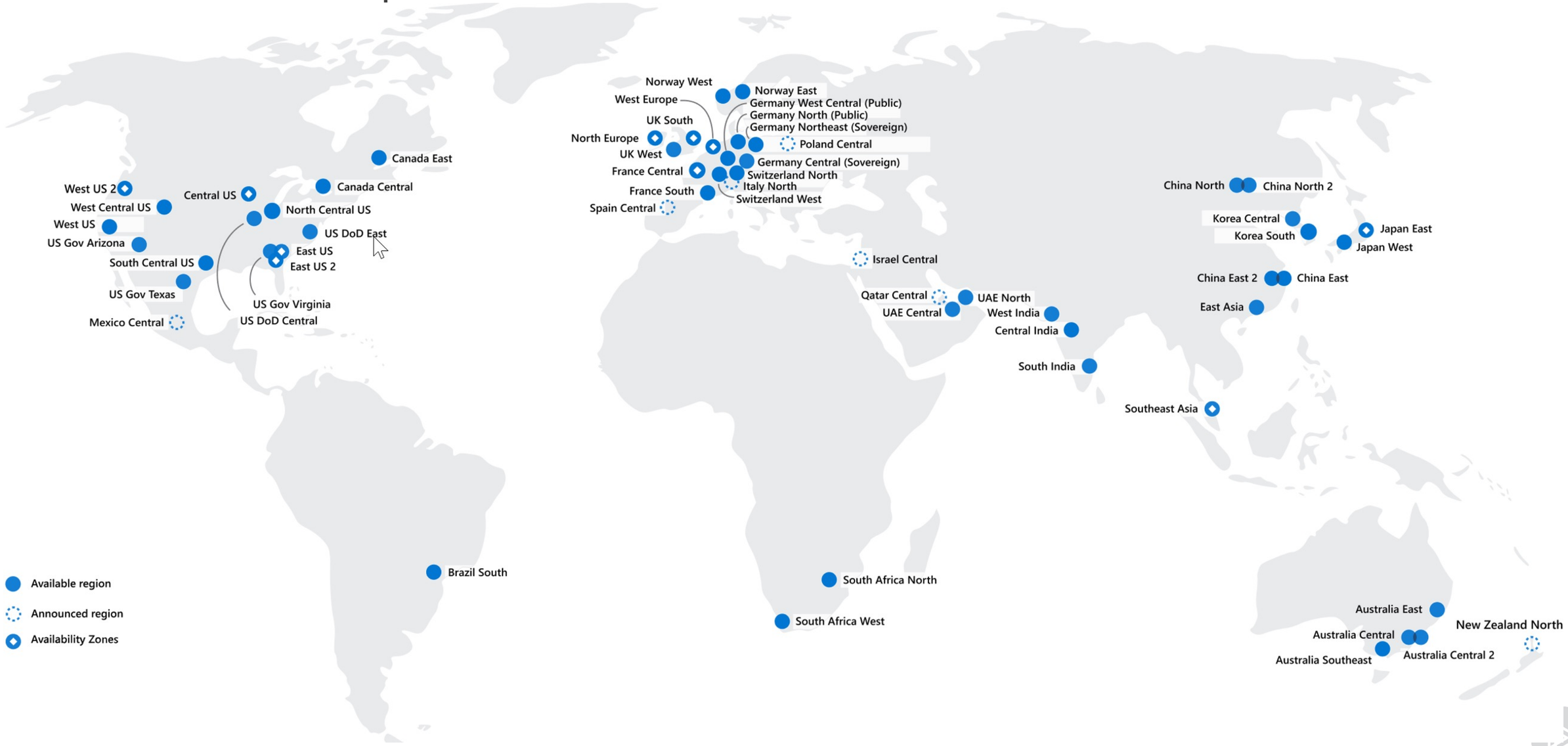
Reliability and Cost

Cost to implement in-house can grow quickly

- 2nd Datacenter Rent
- Networking
- Utilities

In the cloud you benefit from the economies of scale

Example – Azure Datacenter Locations



https://azure.microsoft.com/en-us/global-infrastructure/regions/

Cloud Computing Service Types

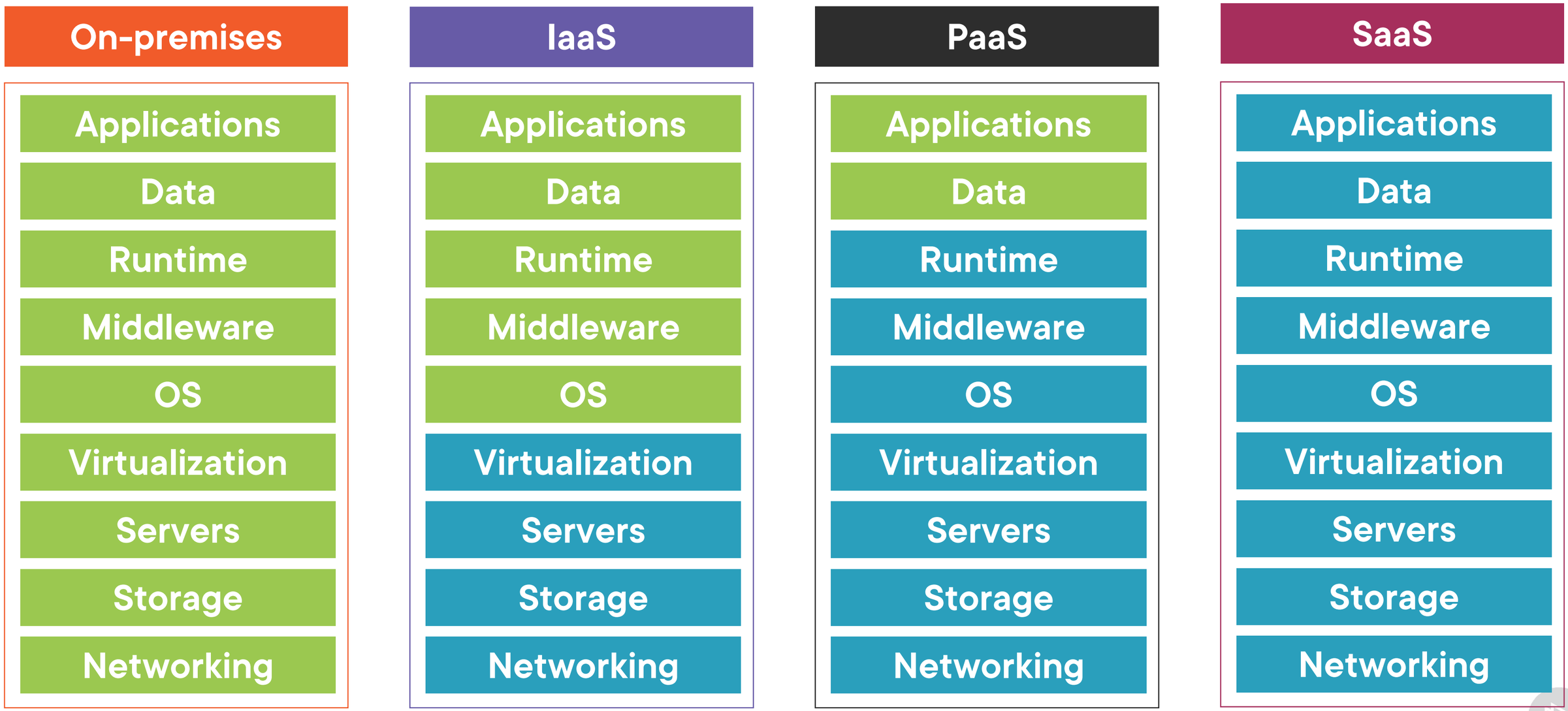
Three Main Types of Cloud Computing Services

Infrastructure as a Service (IaaS)

Platform as a Service (PaaS)

Software as a Service (SaaS)

Types of Cloud Computing Services



Pizza as a Service

You manage

Managed by vendor

On-premises	IaaS	PaaS	SaaS
Dining table	Dining table	Dining table	Dining table
Soda	Soda	Soda	Soda
Electric/Gas	Electric/Gas	Electric/Gas	Electric/Gas
Oven	Oven	Oven	Oven
Fire	Fire	Fire	Fire
Pizza dough	Pizza dough	Pizza dough	Pizza dough
Tomato sauce	Tomato sauce	Tomato sauce	Tomato sauce
Toppings	Toppings	Toppings	Toppings
Cheese	Cheese	Cheese	Cheese
Made at home	Take and bake	Pizza delivery	Dine out

Some Popular Vendors

IaaS	PaaS	SaaS
Microsoft Azure	Heroku	Microsoft 365
Amazon Web Services	Amazon Elastic Beanstalk	Google Workspace
Google Compute Engine	Azure Logic Apps	Salesforce
Rackspace		Dropbox

Cloud Computing Deployment Models

Cloud Computing Deployment Models

Public Cloud

Cloud service provided by a third-party provider, hardware can be shared amongst multiple clients

Private Cloud

Hardware is only used by a single company, which often owns the hardware and datacenter

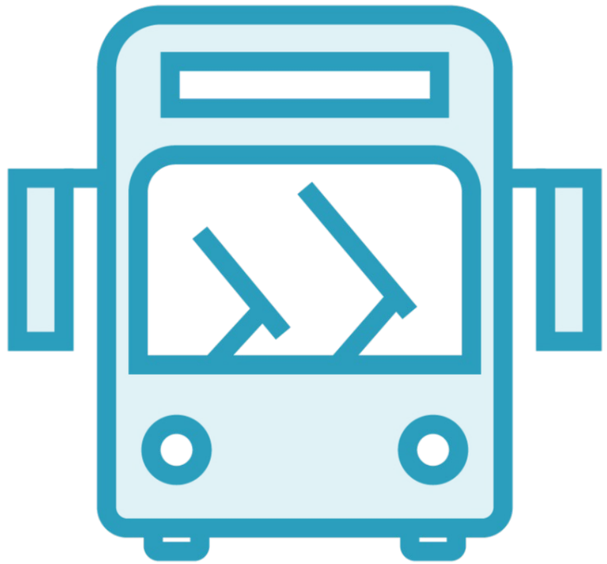
Hybrid Cloud

Combination of public and private cloud with automation and orchestration between the two

Community Cloud

Infrastructure is shared between several orgs from a specific community with common concerns (security, compliance, jurisdiction, etc.)

Public Cloud



Most cloud offerings are in the public cloud model

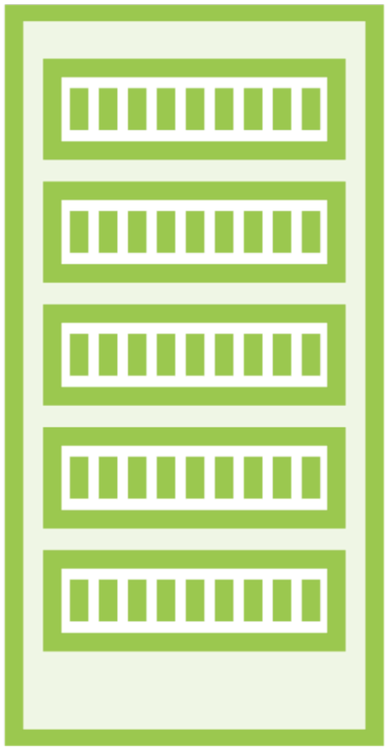
Private and Hybrid Cloud

Consistent tools, experiences, and app models

Some examples

- Azure Stack
- AWS Outposts

Easier to transfer workloads to public cloud in the future



Community Cloud

Example scenario is a cloud offering specific to government entities

Can handle data that is subject to government regulations & requirements

- FedRAMP / DOD / CJIS / etc

Other example community clouds include services in specific countries

- Office 365 China

Conclusion

Introduction to cloud computing

- Allows organizations to consume computing resources as a utility

Cloud computing service types

- Infrastructure as a Service
- Platform as a Service
- Software as a Service

Cloud computing deployment models

- Public cloud
- Private cloud
- Hybrid cloud
- Community cloud

Up Next:
Overview of Microsoft's Cloud Services