

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

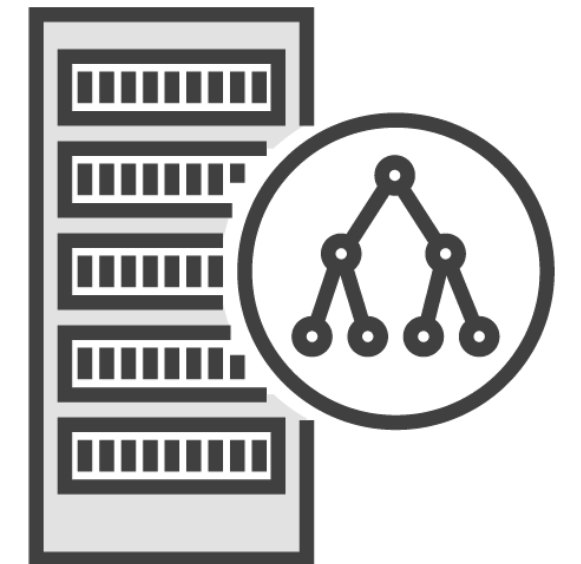
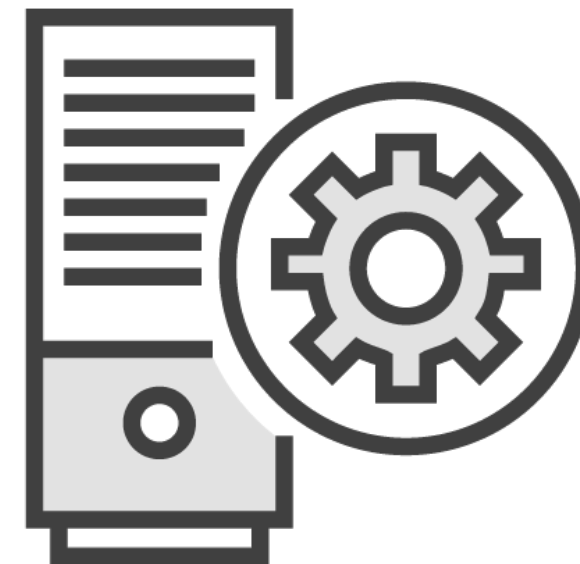
Cloud computing deployment models



Introduction to Cloud Computing



Datacenter in the Past



Datacenter in the Past



X Cores
XX GB Ram
XXXX GB HDD



X Cores
XX GB Ram
XXXX GB HDD



X Cores
XX GB Ram
XXXX GB HDD



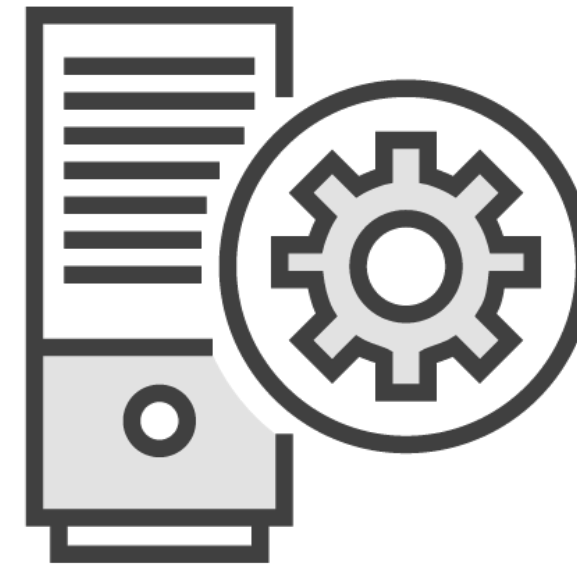
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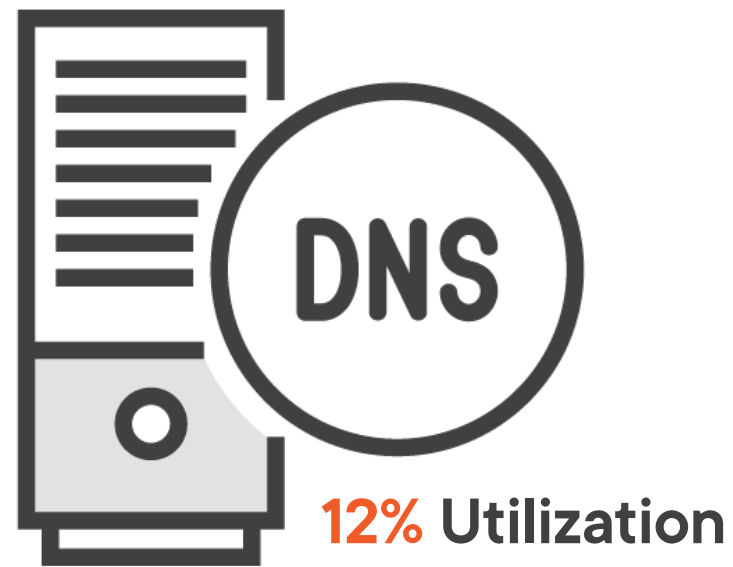
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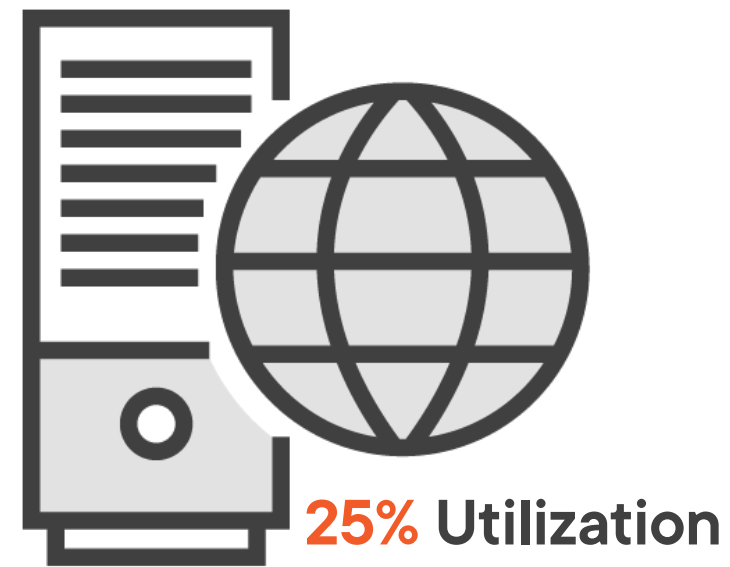
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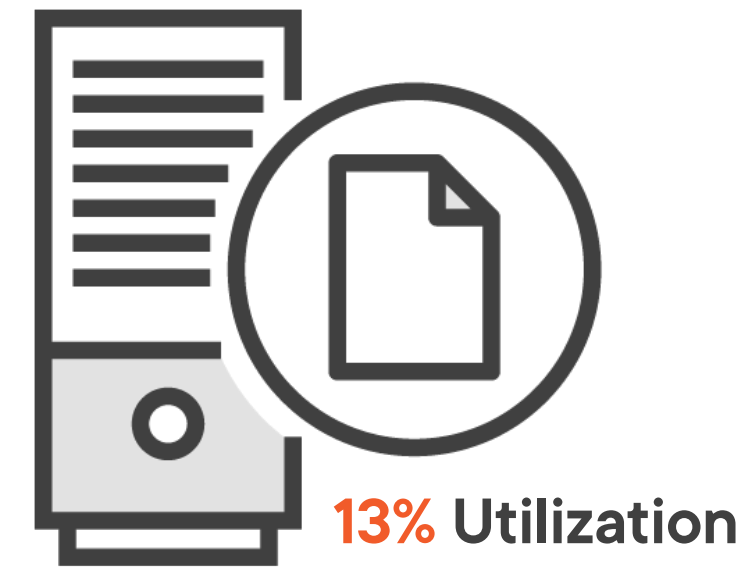
Datacenter in the Past



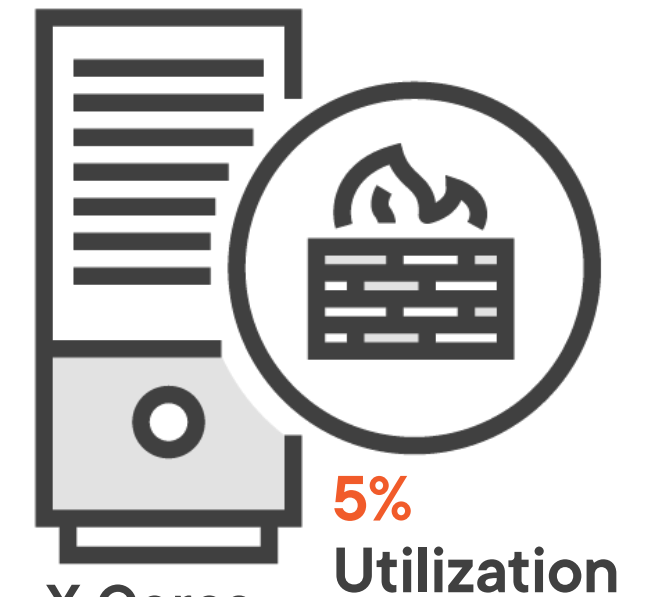
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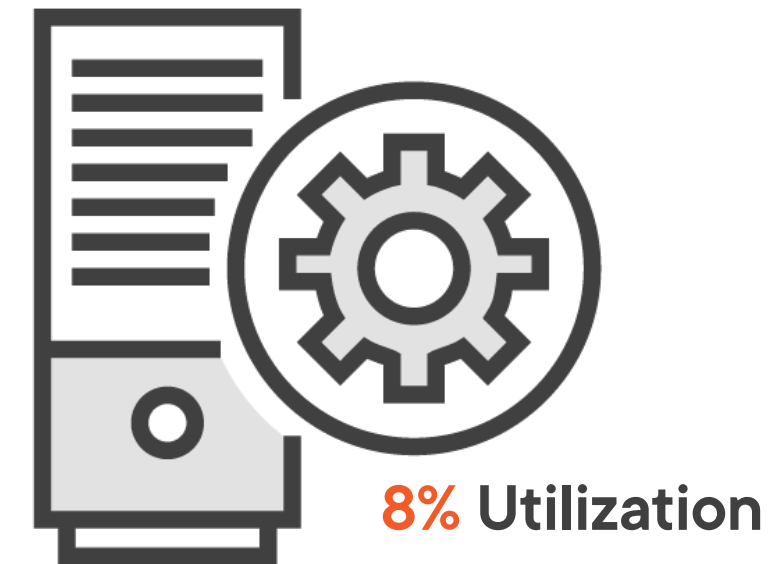
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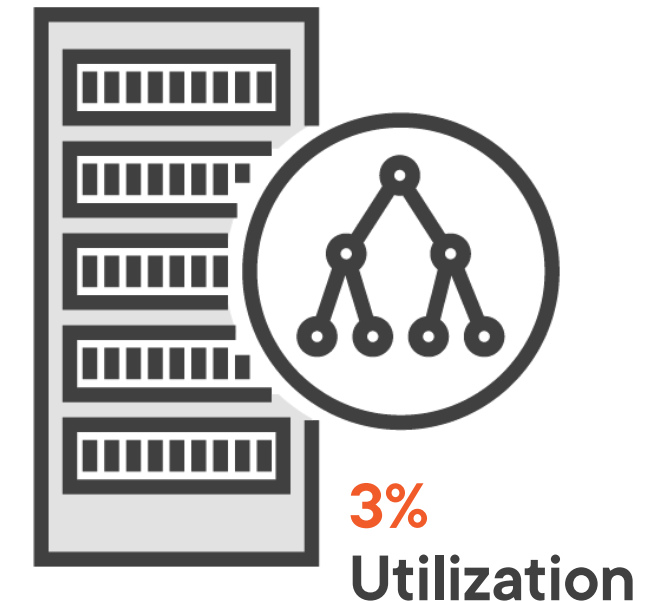
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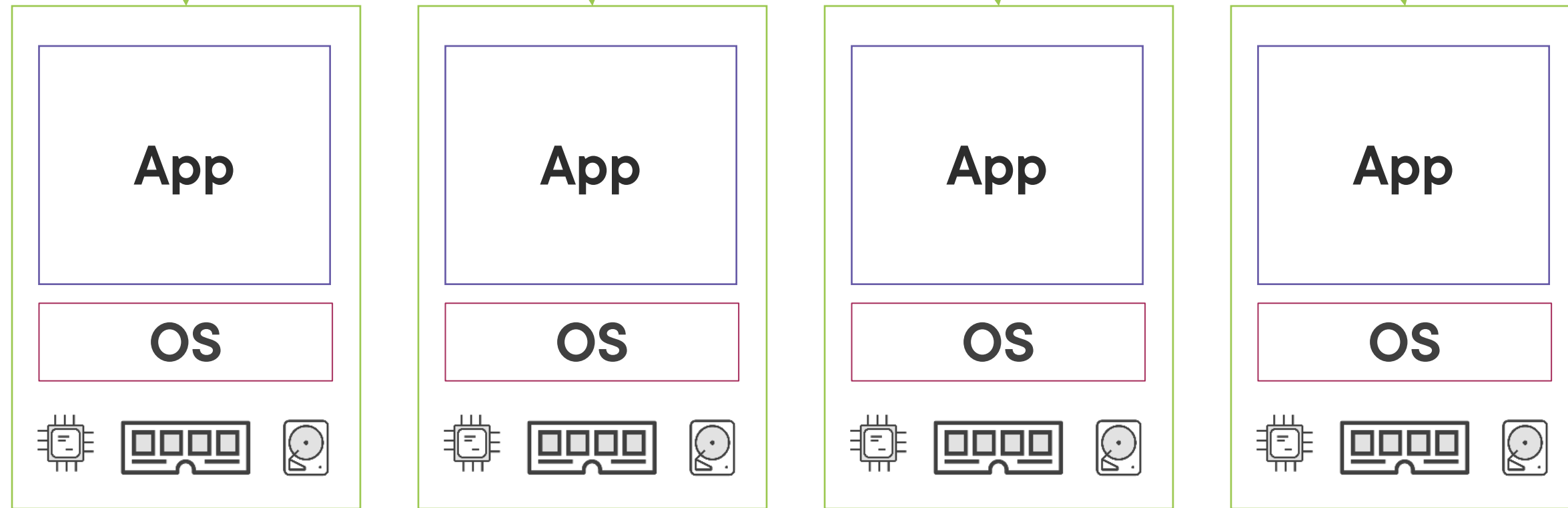
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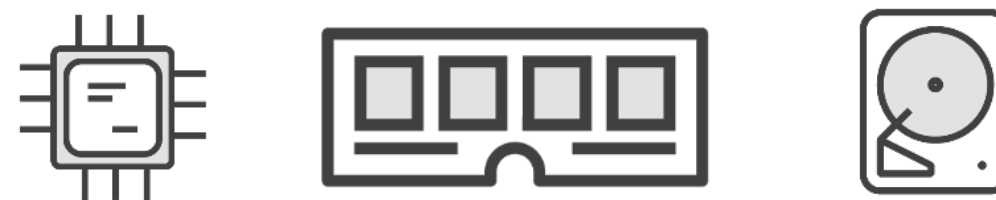
Virtual machines



Virtualization layer (Hypervisor)

Virtual host

Physical server



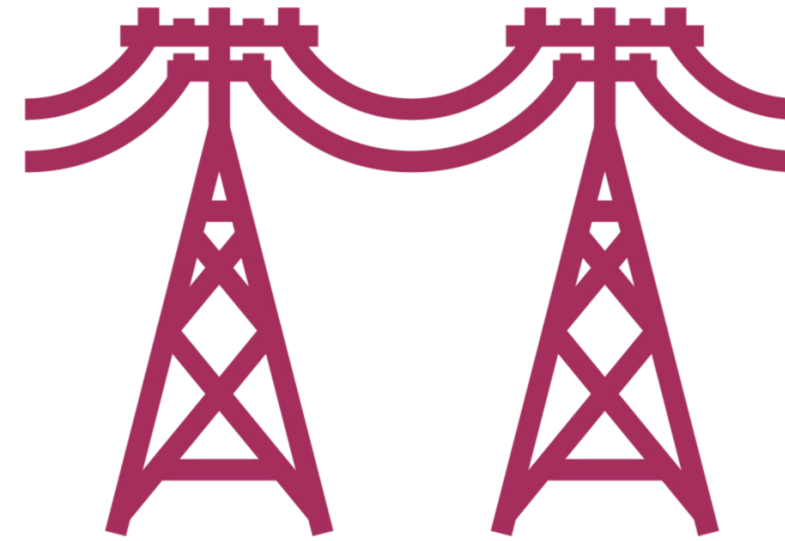
Even with Virtualization



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



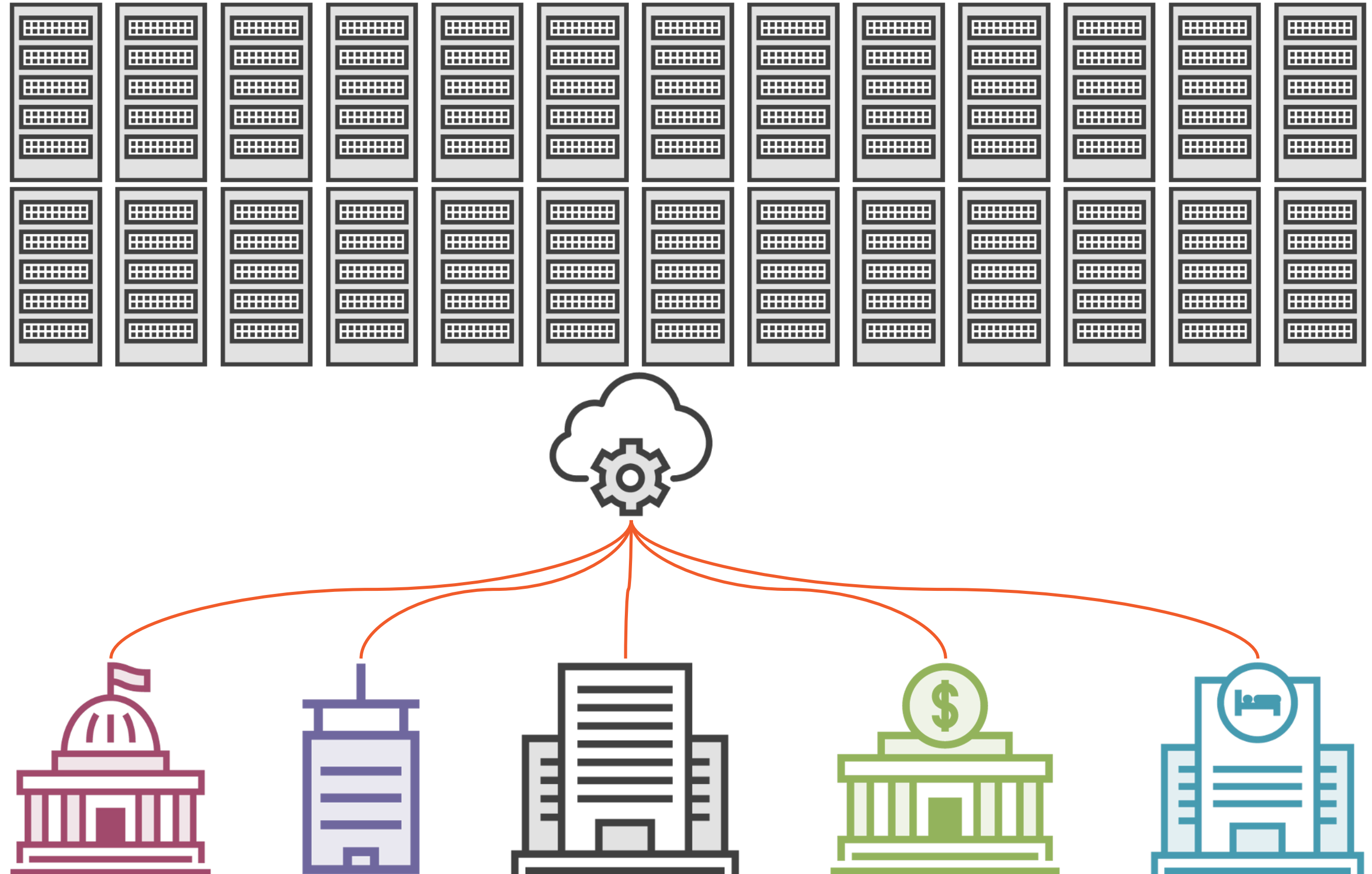
Cloud Computing

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.

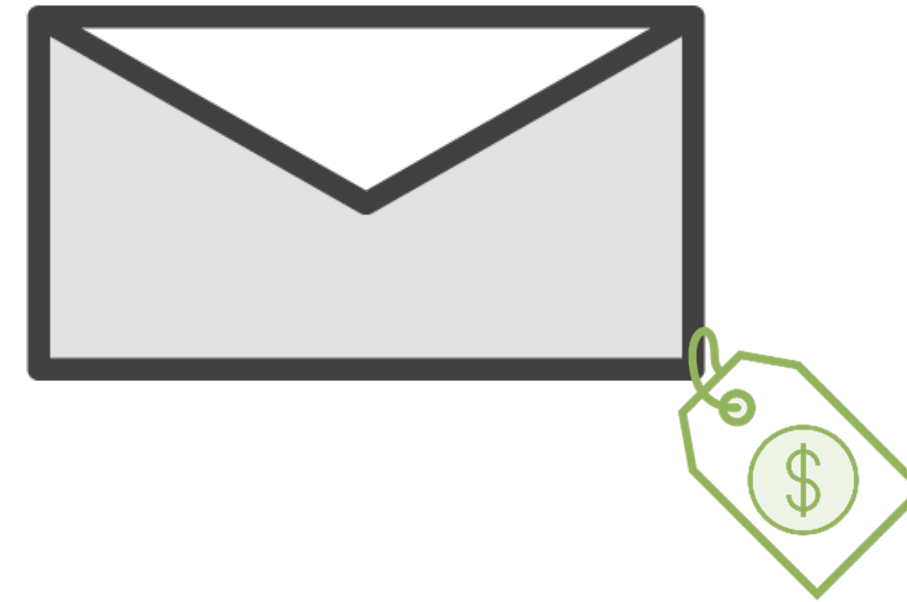


Cloud Infrastructure: Shared Resources

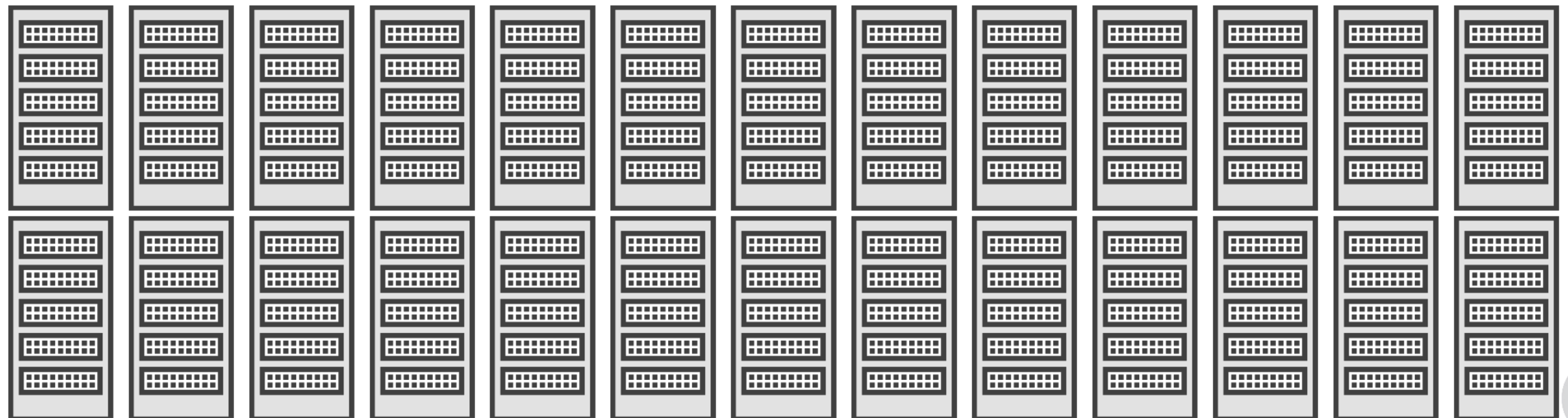
Cloud
Provider



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)

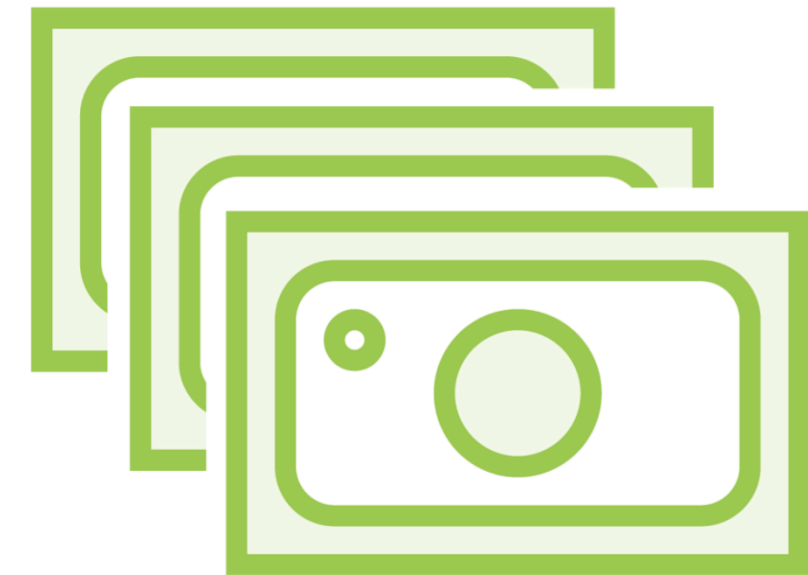


CAPEX vs. OPEX Basics


Capital expenditures (CapEx) are depreciated 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

 Azure

Free account

Virtual Machines

REGION:
West US

OPERATING SYSTEM:
Windows

TYPE:
(OS Only)

TIER:
Standard

CATEGORY:
All

INSTANCE SERIES:
All

INSTANCE:
D2 v3: 2 vCPUs, 8 GB RAM, 50 GB Temporary storage, US\$0.209/hour

VIRTUAL MACHINES

1

x

730

Hours

Savings Options

Save up to 72% on pay-as-you-go prices with 1-year or 3-year Reserved Virtual Machine Instances. Reserved Instances are great for applications with steady-state usage and applications that require reserved capacity. [Learn more about Reserved VM Instances pricing.](#)

Compute (D2 v3)

☒ Pay as you go

☐ 1 year reserved (~32% discount)

☐ 3 year reserved (~57% discount)

US\$85.41

Average per month
(US\$0.00 charged upfront)

Managed Disks

Storage transactions

Bandwidth

OS (Windows)

☒ License included

☐ Azure Hybrid Benefit

US\$67.16

Average per month
(US\$0.00 charged upfront)

= US\$152.57

Average per month
(US\$0.00 charged upfront)

US\$0.00

US\$0.05


US\$0.00

Upfront cost US\$0.00

Monthly cost US\$152.62



Rapid Elasticity Example

 **PluralsightDemoITPro** | Scale out (App Service plan) ...
App Service

Save Discard Refresh Logs Feedback

Custom domains

TLS/SSL settings

Networking

Scale up (App Service plan)

Scale out (App Service plan)

WebJobs

Push

MySQL In App

Properties

Locks

App Service plan

App Service plan

Quotas

Change App Service plan

Development Tools

Clone App

SSH


Advanced Tools


Extensions

ConfigureRun historyJSONNotifyDiagnostic settings

Autoscale is a built-in feature that helps applications perform their best when demand changes. You can choose to scale your resource manually to a specific instance count, or via a custom Autoscale policy that scales based on metric(s) thresholds, or schedule instance count which scales during designated time windows. Autoscale enables your resource to be performant and cost effective by adding and removing instances based on demand. [Learn more about Azure Autoscale](#) or [view the how-to video](#).

Choose how to scale your resource

**Manual scale**
Maintain a fixed instance count


**Custom autoscale**
Scale on any schedule, based on any metrics

Manual scale

Override condition


Instance count


1



Rapid Elasticity Example

Choose how to scale your resource

**Manual scale**
Maintain a fixed instance count

**Custom autoscale**
Scale on any schedule, based on any metrics

Custom autoscale

Autoscale setting name *

ASP-Demo1-b8f4-Autoscale-46

Resource group

Demo1

Default* Auto created scale condition

Delete warning

 The very last or default recurrence rule cannot be deleted. Instead, you can disable autoscale to turn off autoscale.

Scale mode

☒ Scale based on a metric ☐ Scale to a specific instance count

Rules

 It is recommended to have at least one scale in rule. To create new rules, click [Add a rule](#).

Scale out

When

ASP-Demo1-b8f4

(Average) CpuPercentage > 70

Increase count by 1

[+ Add a rule](#)

Instance limits

Minimum 

Maximum 

Default 

1

10

1

Schedule

This scale condition is executed when none of the other scale condition(s) match



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

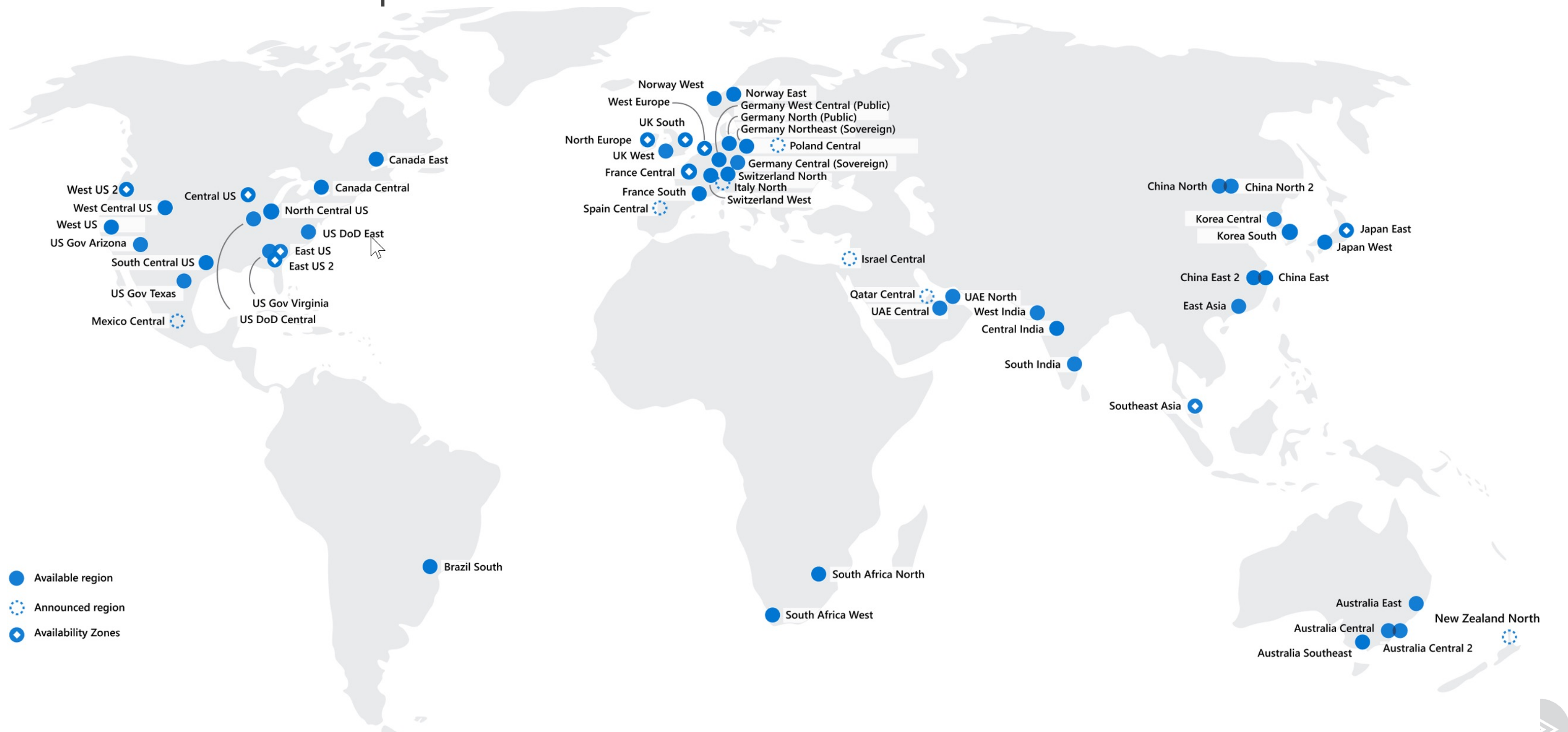
Networking

Utilities

In the cloud you benefit from the economies of scale



Example – Azure Datacenter Locations



Cloud Computing Service Types



Three Main Types of Cloud Computing Services

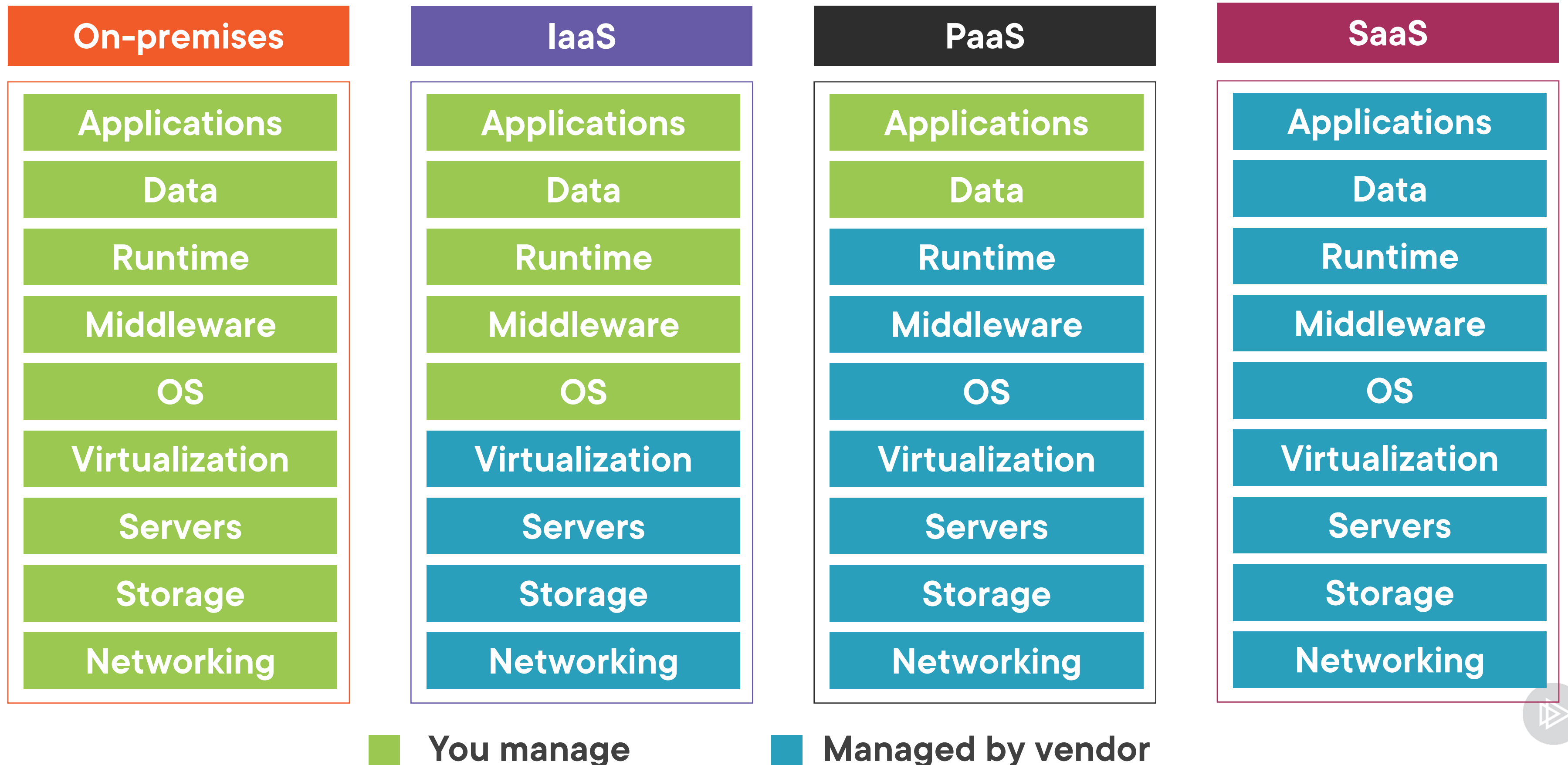
**Infrastructure
as a Service
(IaaS)**

**Platform
as a Service
(PaaS)**


**Software
as a Service
(SaaS)**



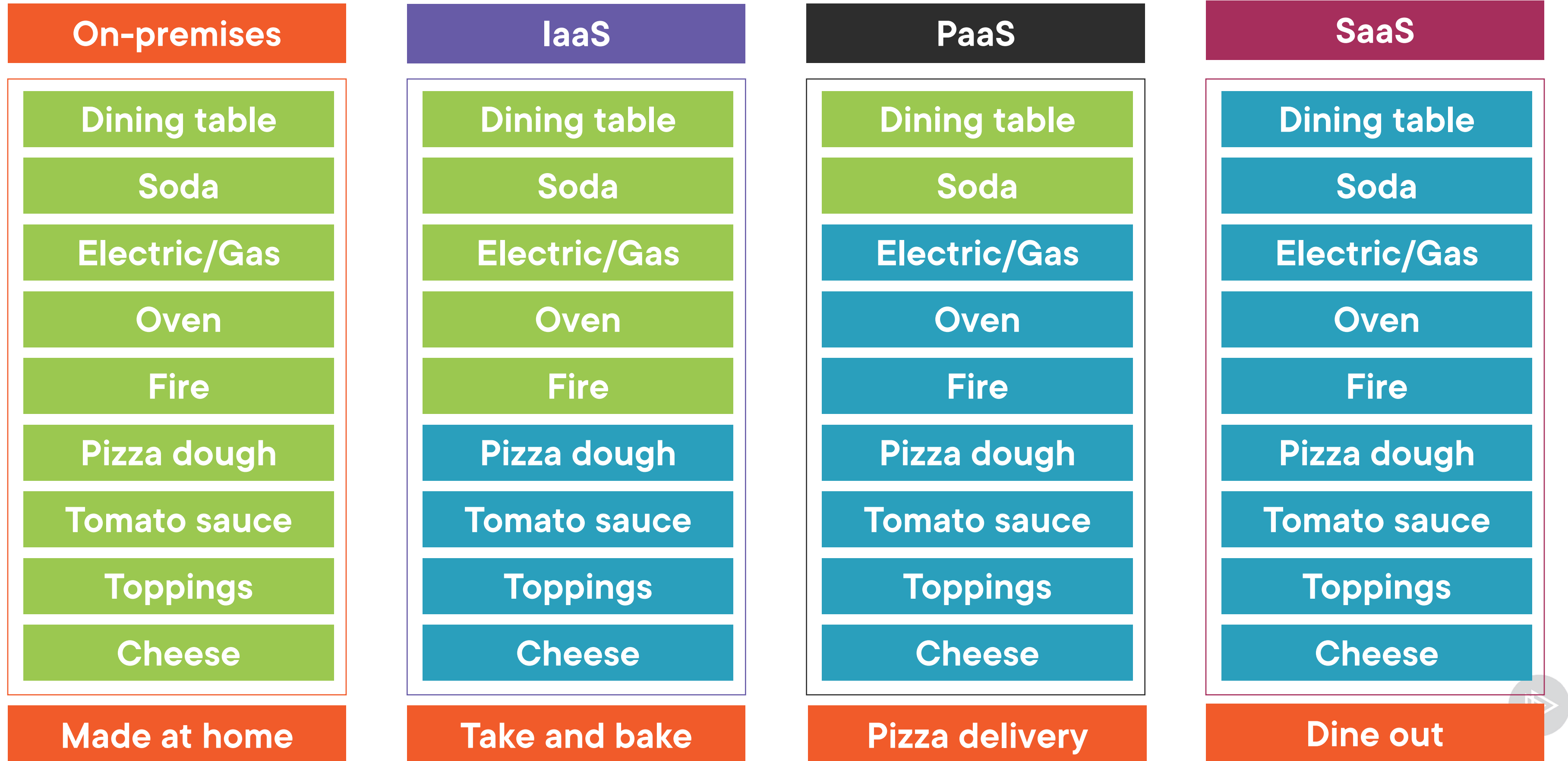
Types of Cloud Computing Services



Pizza as a Service

 You manage

 Managed by vendor



Some Popular Vendors

IaaS

Microsoft Azure

**Amazon Web
Services**

**Google Compute
Engine**

Rackspace

PaaS

Heroku

**Amazon Elastic
Beanstalk**

Azure Logic Apps

SaaS

Microsoft 365

**Google
Workspace**

Salesforce

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

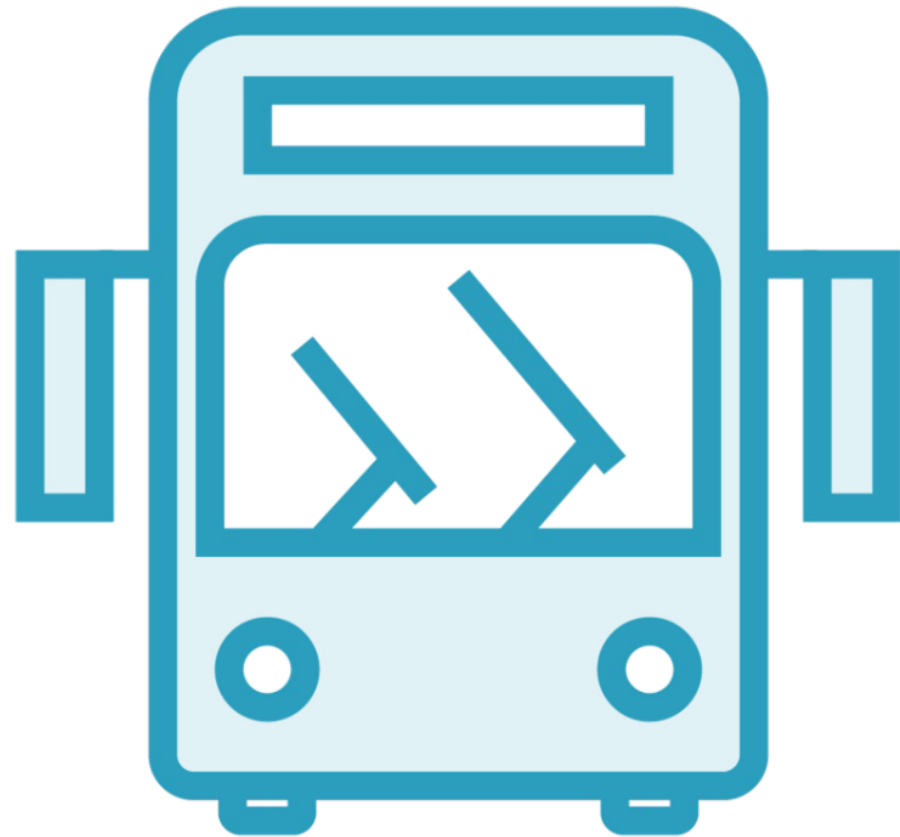
Combination of public and private cloud with automation and orchestration between the two

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

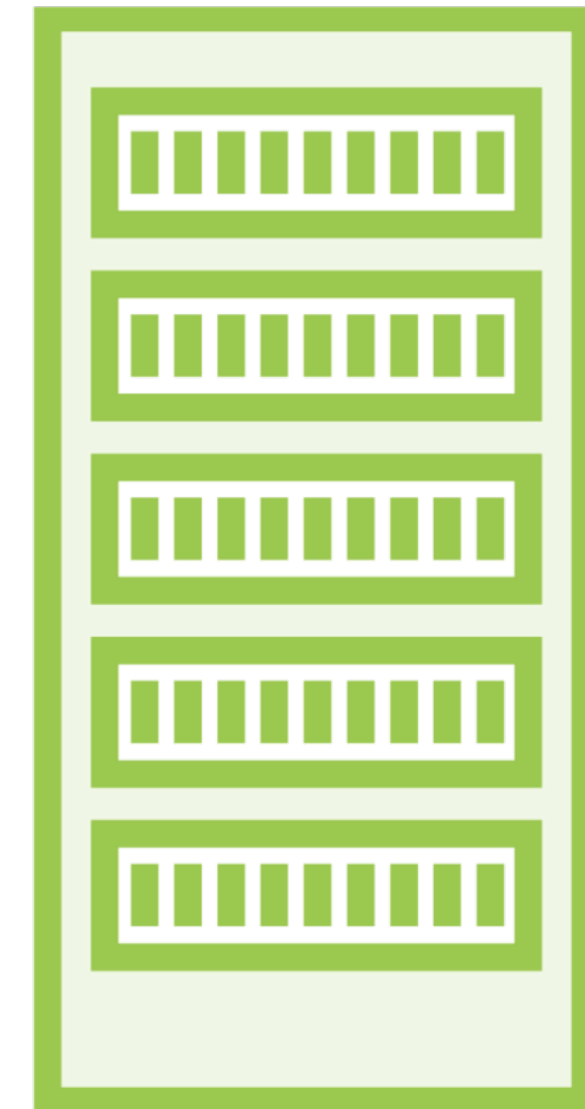
Consistent tools, experiences, and app models

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

