Cloud Fundamentals

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Uli Hitzel | Singapore, June 11th 2022

UNITED WOMEN SINGAPORE

Agenda

1: **What**’s Cloud Computing & **Why** does it matter?

2: Group Activity

3: Presentation

- Break -

4: **How** to use the Cloud & How to get started

5: Group Activity

6: Presentation

Part 1: What's Cloud Computing and why does it matter?

Let’s start

Cloud Computing

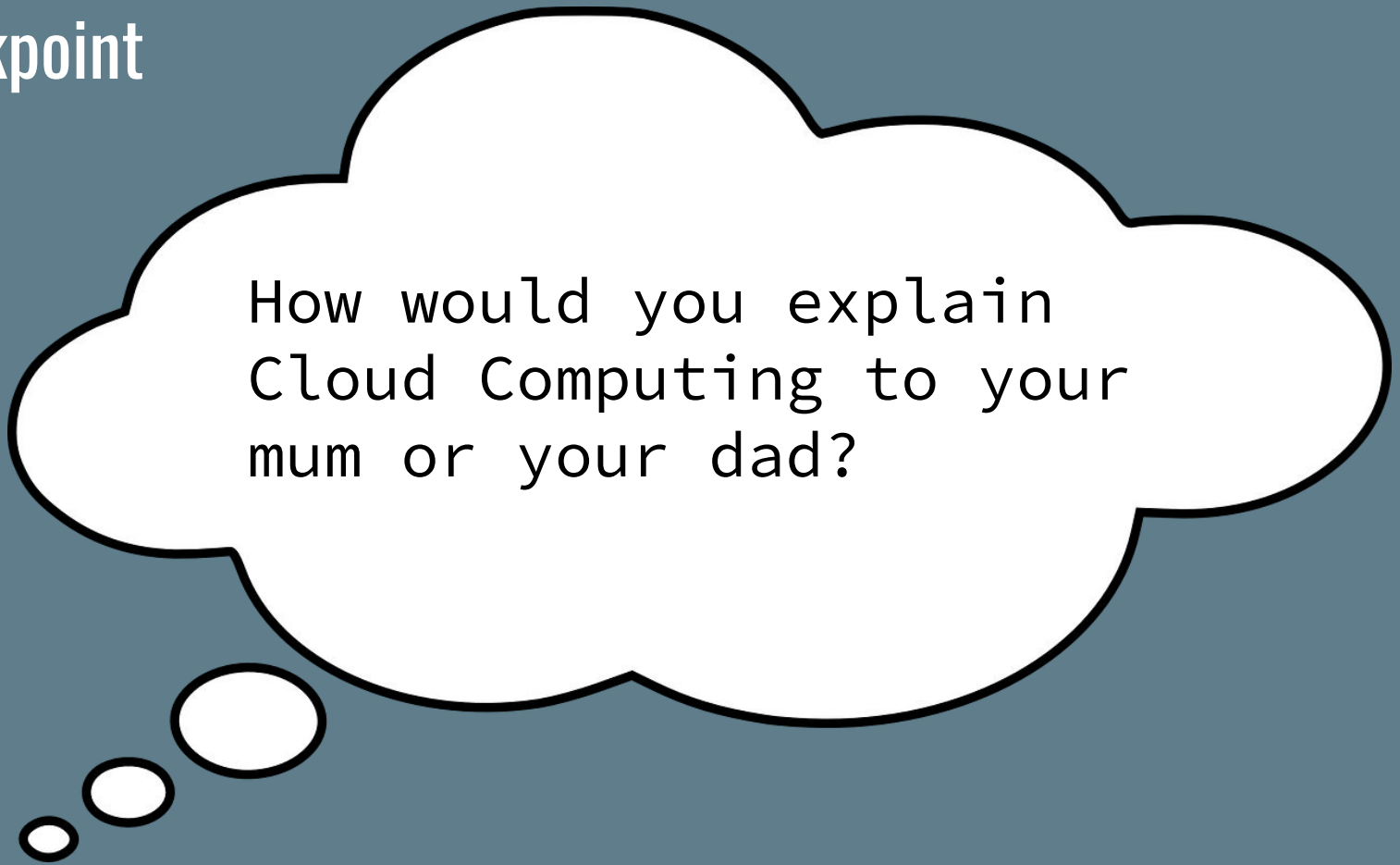
Cloud computing is a type of internet-based computing, where the user accesses applications, storage and data from a remote location.

Why “Cloud”?

Cloud Computing – Why?

- Reduce costs
- Increase agility
- Improve security
- Innovate fast

Checkpoint

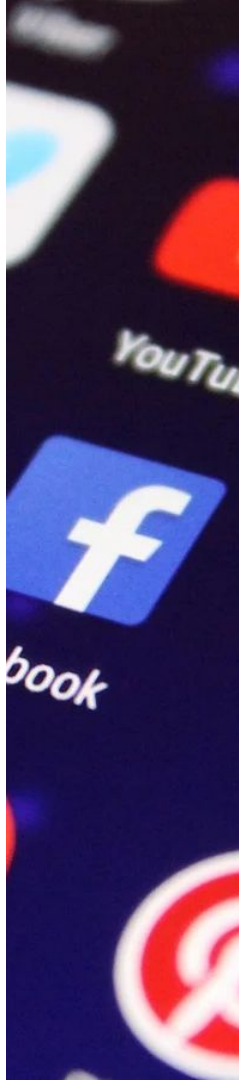

How would you explain Cloud Computing to your mum or your dad?

How does Cloud Computing work?

In cloud computing, resources are delivered **as a service** over the **Internet**. Customers can access these services, which are hosted in the cloud, using a variety of devices, including laptops, smartphones, and tablets.

A Brief History of the Internet

- Network of computers that can communicate with each other
- **1960s**: Created in the 1960s, and a lot of technology pieces we use today are several decades old!
- **1990s**: The World Wide Web
- You "went" online using desktop computers to surf and chat. However, the world was still analog
- **2006**: Amazon offers IT solutions as “web services”
- **2007**: Steve Jobs introduces the iPhone
- **2010s**: Mobile devices are the primary way people access the internet
- **2020s**: Internet of Things → everything is connected to the internet!



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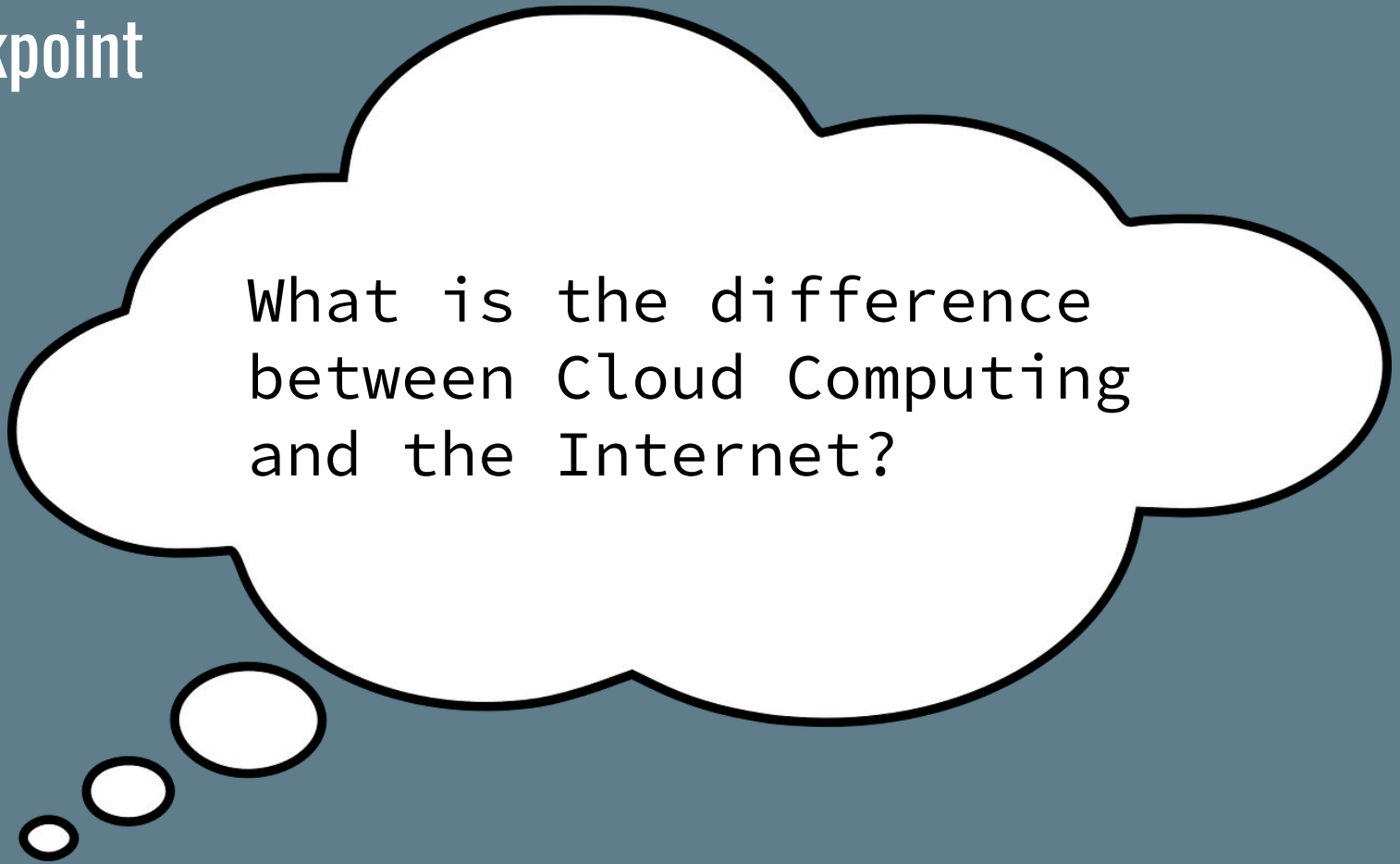
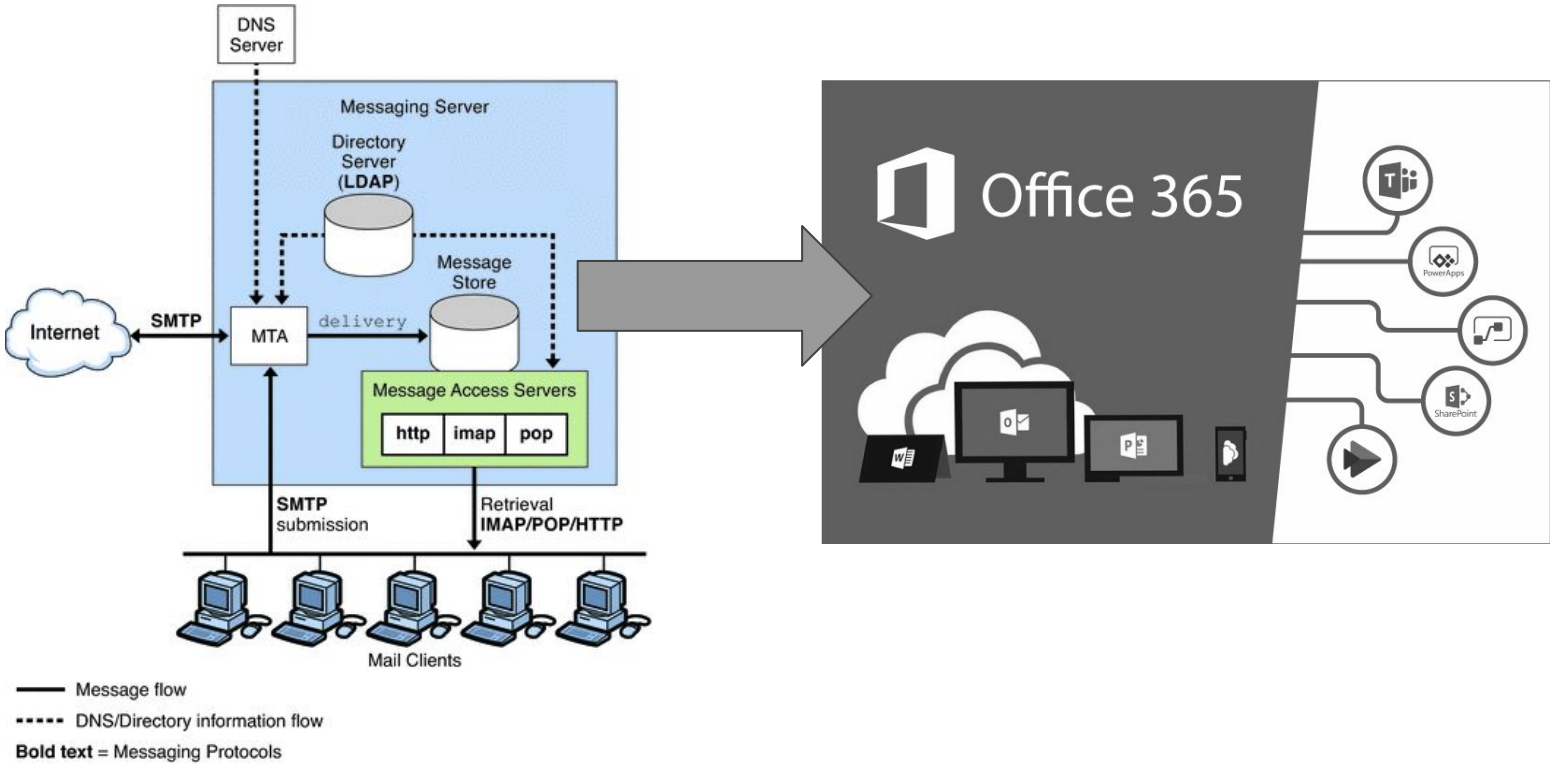

What is the difference between Cloud Computing and the Internet?

Cloud: From on-premise infrastructure...

… to consuming as-a-service, pay-as-you-go!

Example: Email Servers – From on-premise to cloud



https://docs.oracle.com/cd/E19284-01/819-4439/acrgs/index.html

Cloud Computing → Fast Innovation

Candy Crush Saga

King

Contains ads · In-app purchases

The sweetest puzzle game! Switch, match & blast candies to win levels!

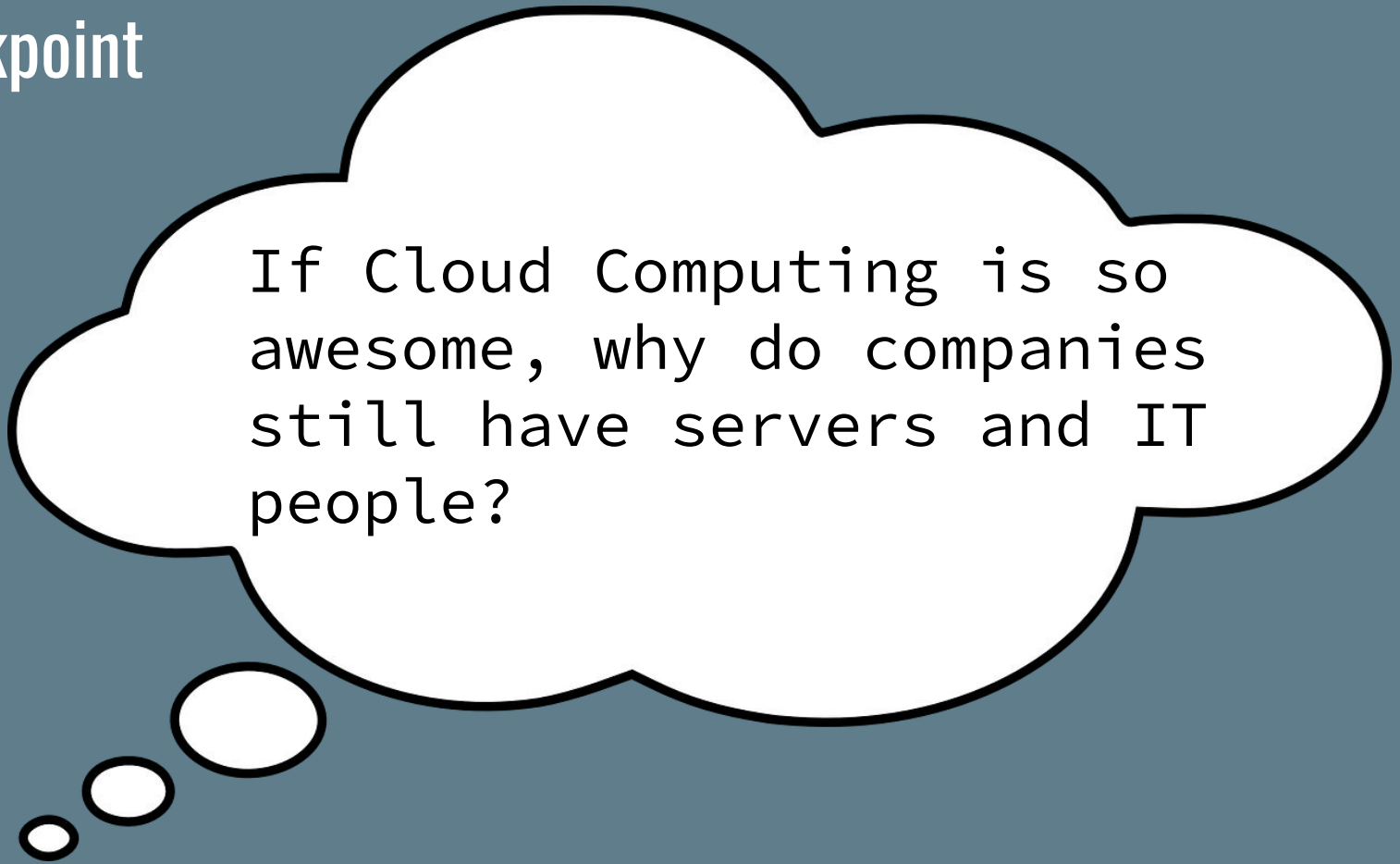
4.5★ 34M reviews

1B+ Downloads

3+ Rated for 3+

Install

Checkpoint


If Cloud Computing is so awesome, why do companies still have servers and IT people?

In Summary

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1. Cloud computing is internet-based computing. User access applications, storage and data from a remote location.
2. The term "cloud" refers to the Internet, which is a giant network of connected computers.
3. Cloud computing can help companies reduce costs, increase agility, improve security, and innovate fast.
4. In cloud computing, resources are delivered as a service over the Internet.
5. Without cloud computing, many companies would have to purchase, install, and maintain new hardware and software to keep up with the latest technology.

Group Activity: Brainstorming

Healthcare
Retail
Manufacturing
Banking and Finance
Government
Education
Media & Entertainment
Transportation
Hospitality
Non-profit

1: How can cloud computing be used to improve the industry?

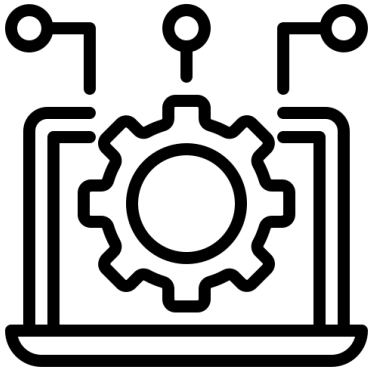
2: Which restrictions and challenges may this industry have to adopt cloud computing?

Part 2: How to use Cloud Computing and how to get started.

Anything-as-a-Service

IaaS

Infrastructure as
a Service



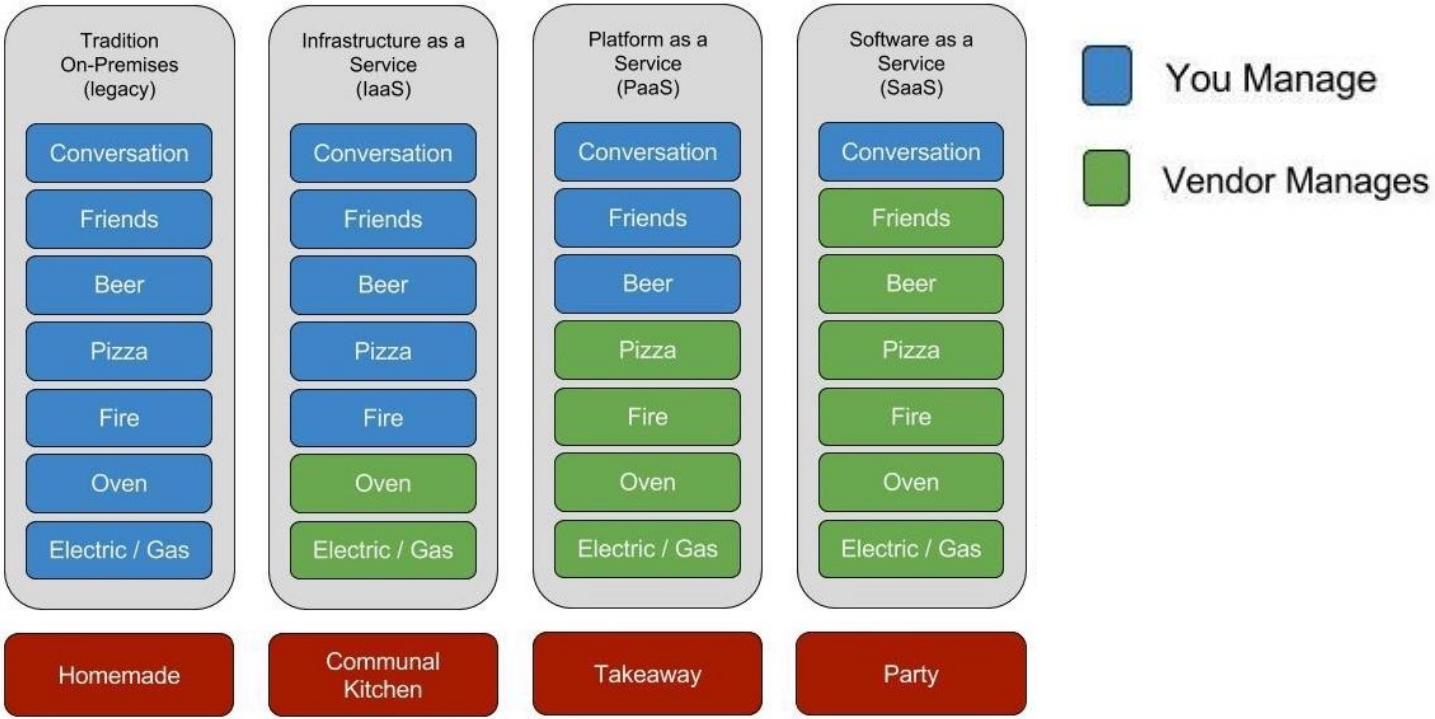
PaaS

Platform
as a Service

SaaS

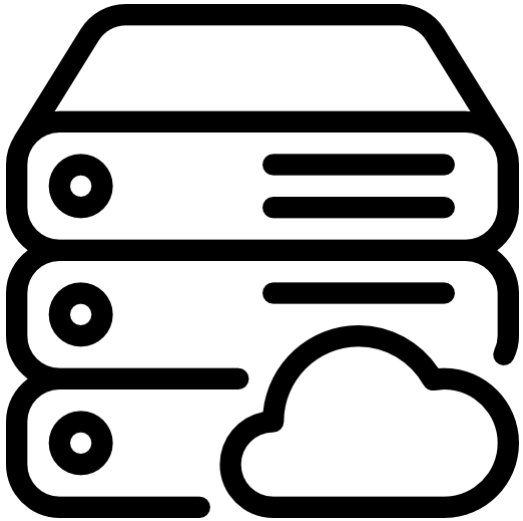
Software
as a Service

Pizza-as-a-Service



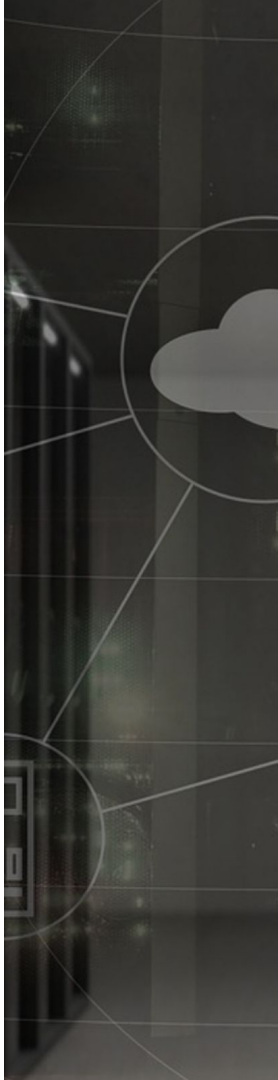
https://pkerrison.medium.com/pizza-as-a-service-2-0-5085cd4c365e

Infrastructure-as-a-Service (IaaS)



- Compute Cycles
- Storage
- Networking

Typical consumer is an **IT person.**



Google Cloud Platform

Compute Engine

Name *
windows-box-01

Labels

+ ADD LABELS

Region *
asia-southeast1 (Singapore)
Region is permanent

Zone *
asia-southeast1-a
Zone is permanent

Machine configuration

Machine family

GENERAL-PURPOSE | COMPUTE-OPTIMISED | MEMORY-OPTIMISED | GPU

Machine types for common workloads, optimised for cost and flexibility

Series
E2
CPU platform selection based on availability

Machine type
e2-medium (2 vCPU, 4 GB memory)

vCPU	Memory
1 shared core	4 GB

Monthly estimate

US$35.67

That's about US$0.05 hourly

Pay for what you use: No upfront costs and per-second billing

Item	Monthly estimate
2 vCPU + 4 GB memory	US$30.17
50 GB balanced persistent disk	US$5.50
Sustained use discount	-US$0.00
Total	US$35.67

Compute Engine pricing

LESS

Boot disk

Select an image or snapshot to create a boot disk, or attach an existing disk. Can't find what you're looking for? Explore hundreds of VM solutions in Marketplace

PUBLIC IMAGES | CUSTOM IMAGES | SNAPSHOTS | EXISTING DISKS

Operating system
Windows Server

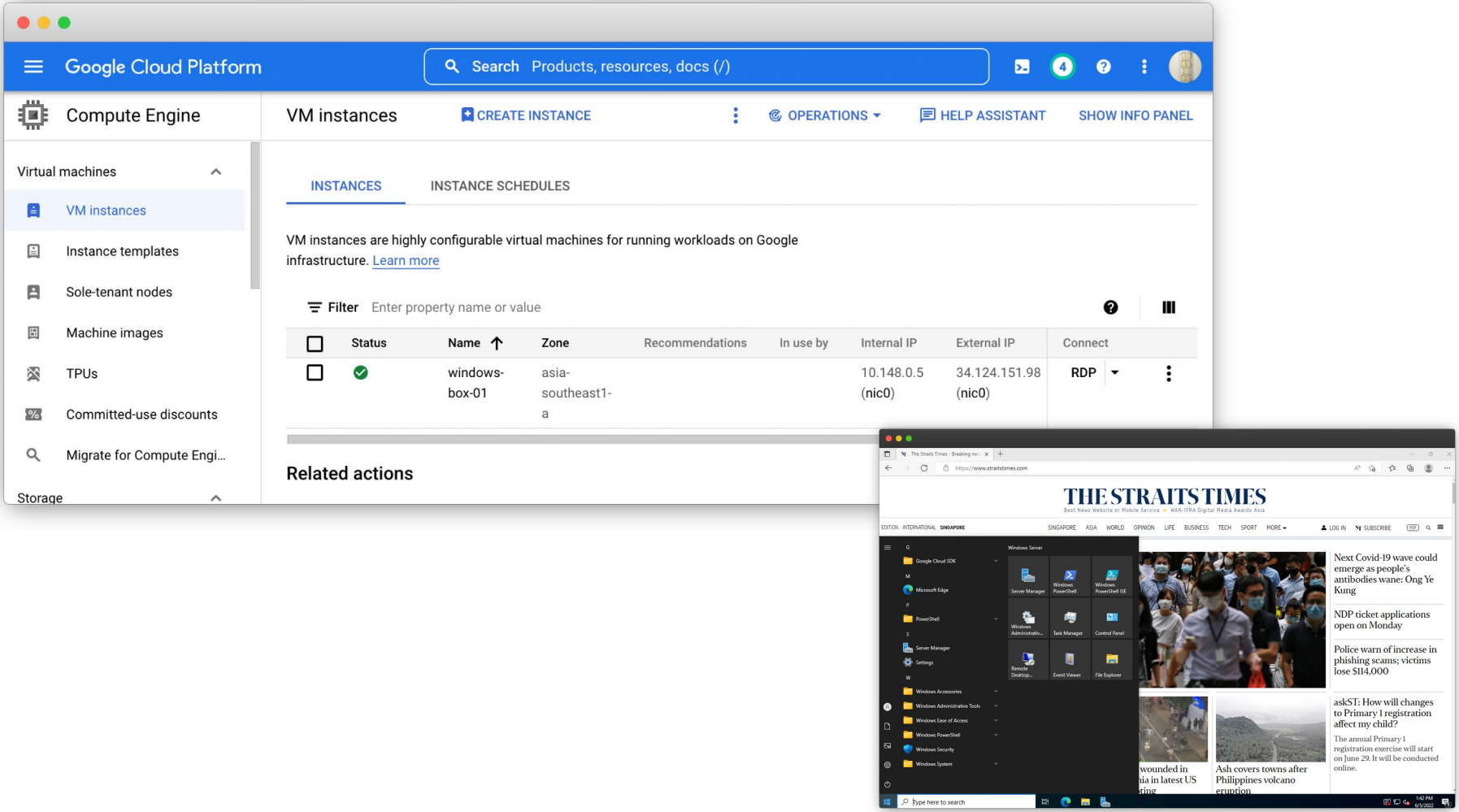
Version *
Windows Server 2022 Datacenter
Server with Desktop Experience, x64 built on 20220513, supports Shielded VM features

Boot disk type *
Balanced persistent disk

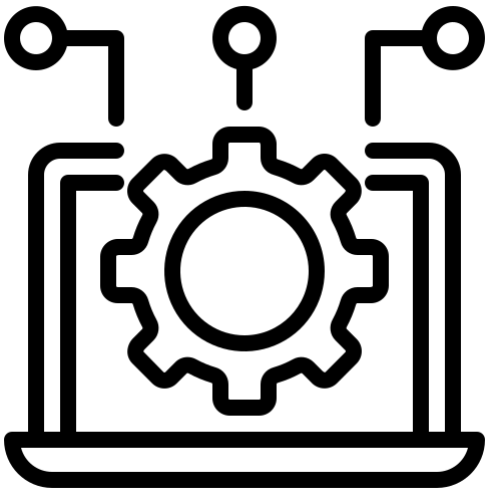
Size (GB) *
50

SHOW ADVANCED CONFIGURATION

SELECT CANCEL

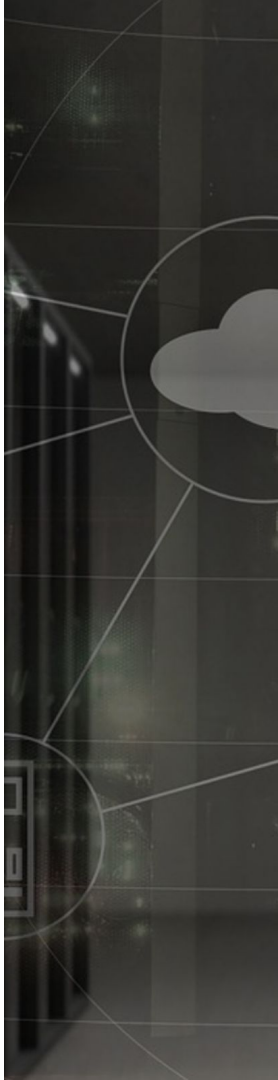

Google Cloud Platform
Search Products, resources, docs (/)
Compute Engine
VM instances
CREATE INSTANCE
OPERATIONS
HELP ASSISTANT
SHOW INFO PANEL
Virtual machines
VM instances
Instance templates
Sole-tenant nodes
Machine images
TPUs
Committed-use discounts
Migrate for Compute Engi...
Storage
INSTANCES
INSTANCE SCHEDULES
VM instances are highly configurable virtual machines for running workloads on Google infrastructure. Learn more
Filter Enter property name or value
Status
Name
Zone
Recommendations
In use by
Internal IP
External IP
Connect
windows-box-01
asia-southeast1-a
10.148.0.5 (nic0)
34.124.151.98 (nic0)
RDP
Related actions
THE STRAITS TIMES
Next Covid-19 wave could emerge as people's antibodies wane: Ong Ye Kung
NDP ticket applications open on Monday
Police warn of increase in phishing scams; victims lose $114,000
askST: How will changes to Primary 1 registration affect my child?
Ash covers towns after Philippines volcano eruption

Platform-as-a-Service (PaaS)



- Middleware
- Development Tools
- Databases

Typical consumer is a **Software Developer.**



Search or jump to... / Pulls Issues Marketplace Explore

u1i / apigeek.net Public

Pin | Watch 1 | Fork 5 | Star 2

Code | Pull requests | Actions | Security | Insights | Settings

apigeek.net / README.md in master

Cancel changes

Edit file | Preview | Spaces | 2 | Soft wrap

```
1  # API Geek
2
3  ![](./resources/uli2-round-small2.png)
4
5  ## About me
6
7  * [LinkedIn Profile](https://www.linkedin.com/in/uhitzel/)
8  * [Timeline of Posts on LinkedIn](https://www.linkedin.com/in/uhitzel/detail/
   activity/shares/)
9  * [GitHub](https://github.com/u1i)
10 * [Keybase](https://keybase.io/u1i)
11 * [Speaker Photos & Bio](https://github.com/u1i/u1i)
12 * [Send me an email](./resources/nospam.jpg)
13
14 ## Open Source Projects
15
16 * [Yoisho Open Banking Project](https://github.com/u1i/yoisho)
17 * [Bambleweeny](https://github.com/u1i/bambleweeny): A lightweight key-value store and
```

API Geek

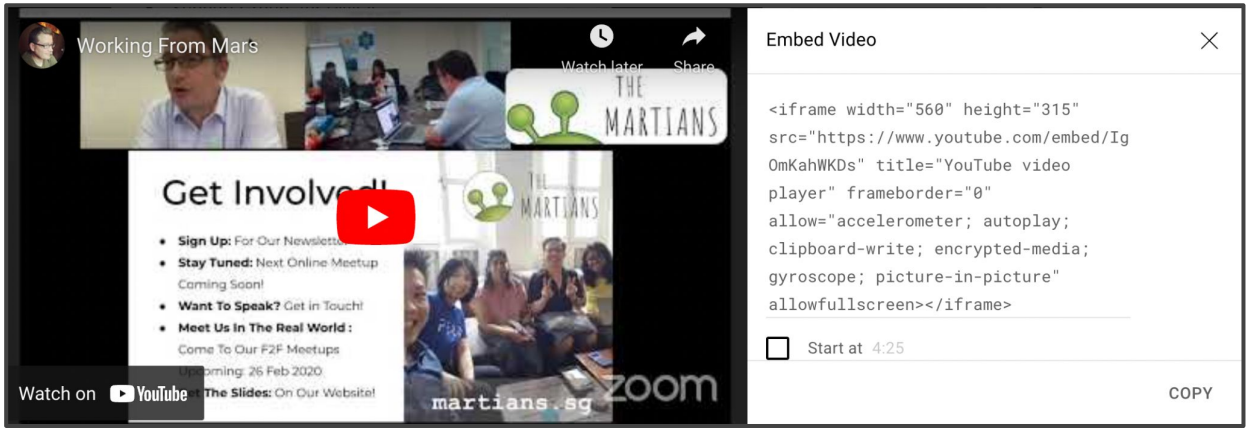
About me

- LinkedIn Profile
- Timeline of Posts on LinkedIn
- GitHub
- Keybase
- Speaker Photos & Bio
- Send me an email

Open Source Projects

- Yoisho Open Banking Project
- Bambleweeny: A lightweight key-value store and message broker based on HTTP/REST
- keiju - Minimalist API Gateway in a ~25 MB Container.
- samsa converts between OpenAPI v2 and v3 formats (YAML/JSON)

YouTube

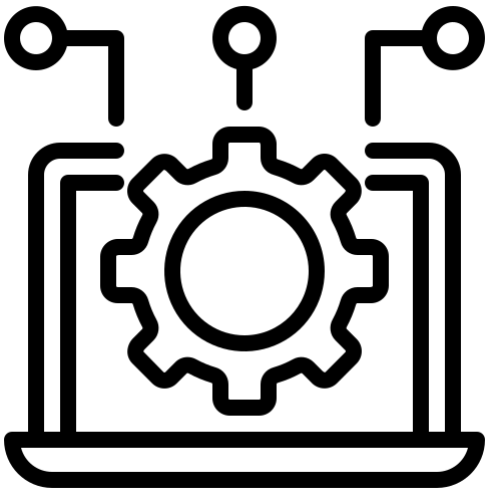


Drag and drop video files to upload

Your videos will be private until you publish them.

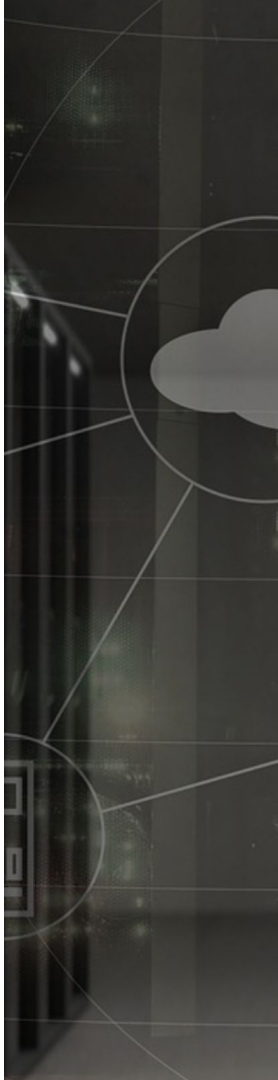
SELECT FILES

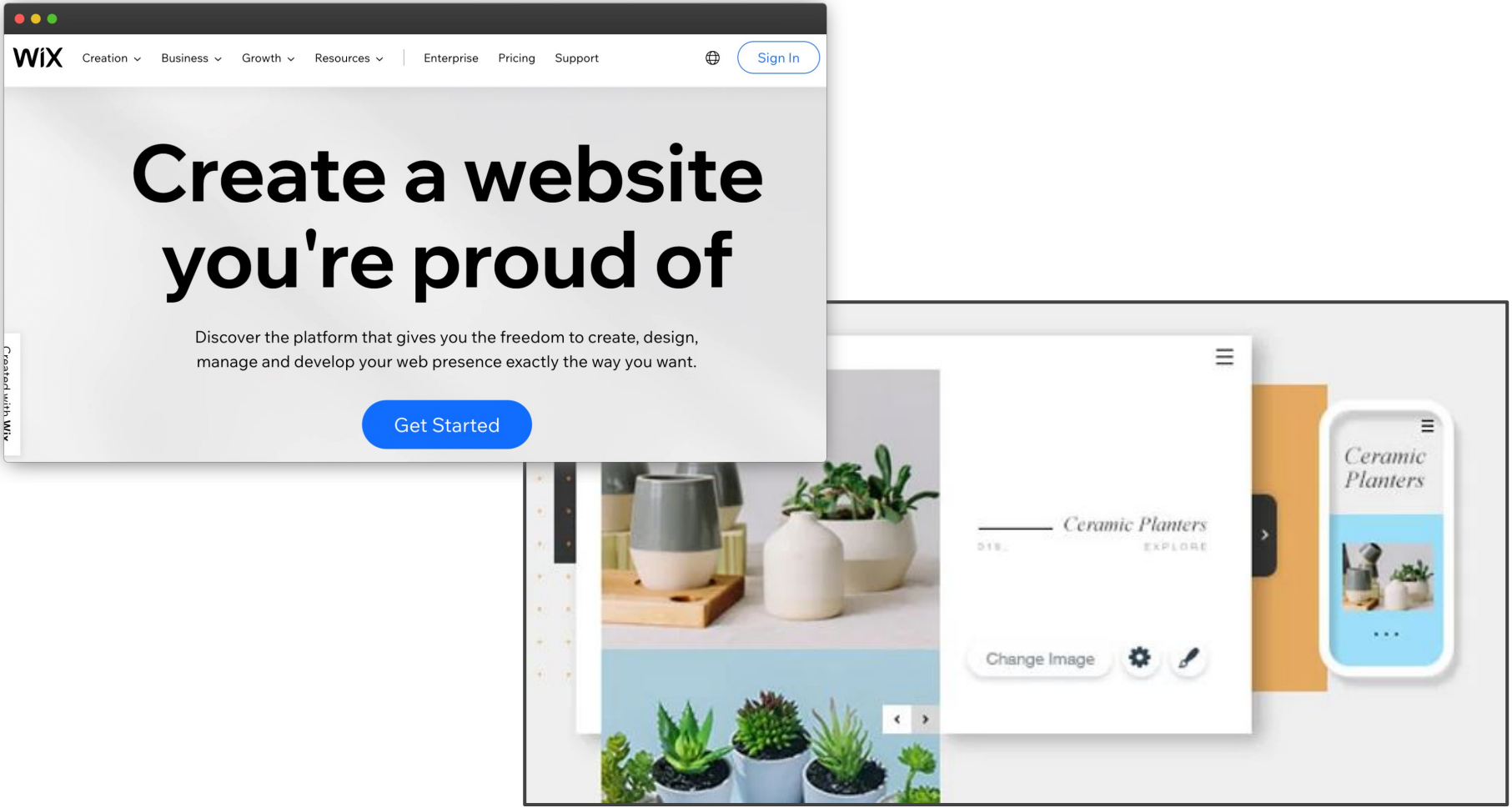
Software-as-a-Service (SaaS)



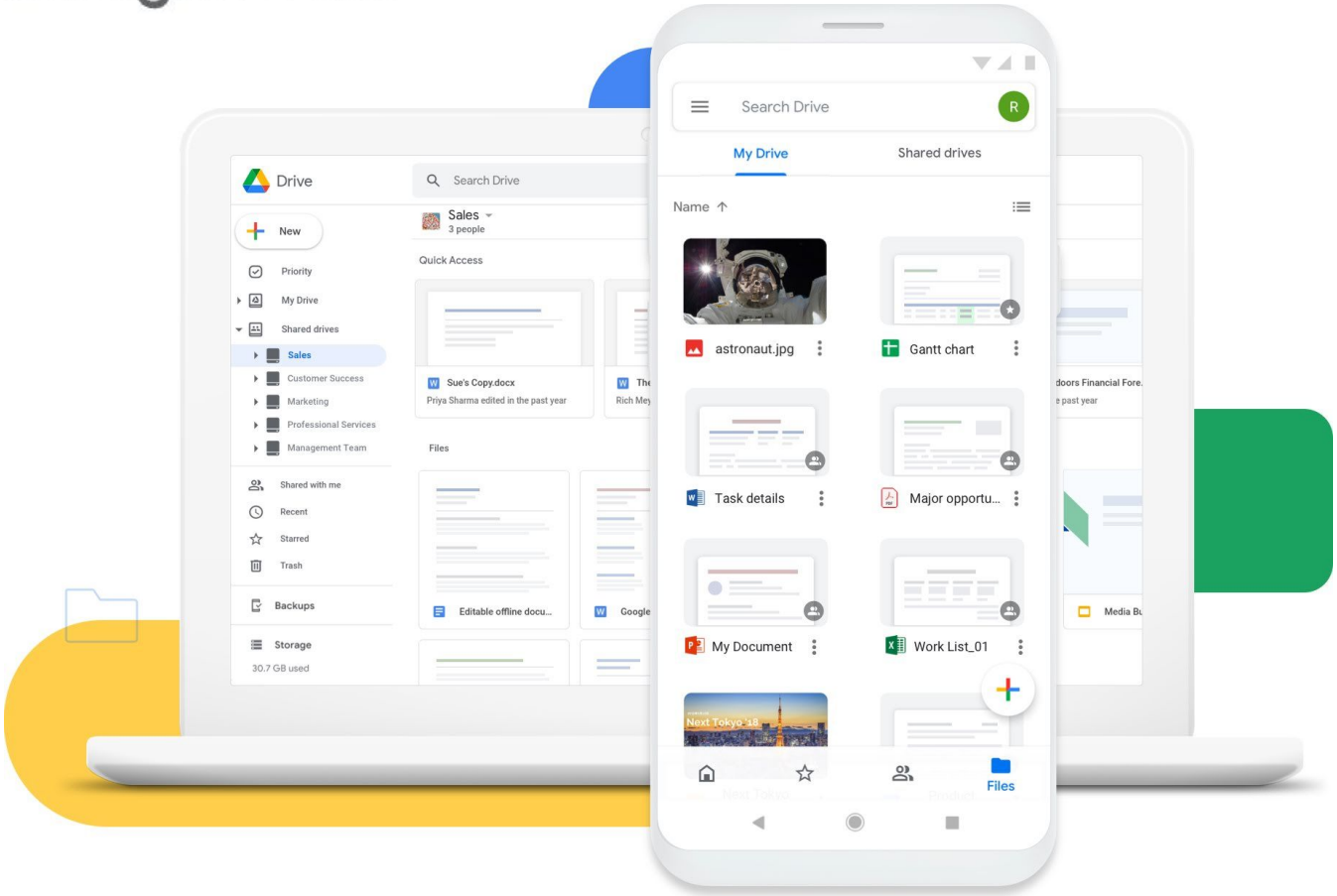
- Office Productivity
- Communication
- Project Management

Typical consumer is a **Business User.**

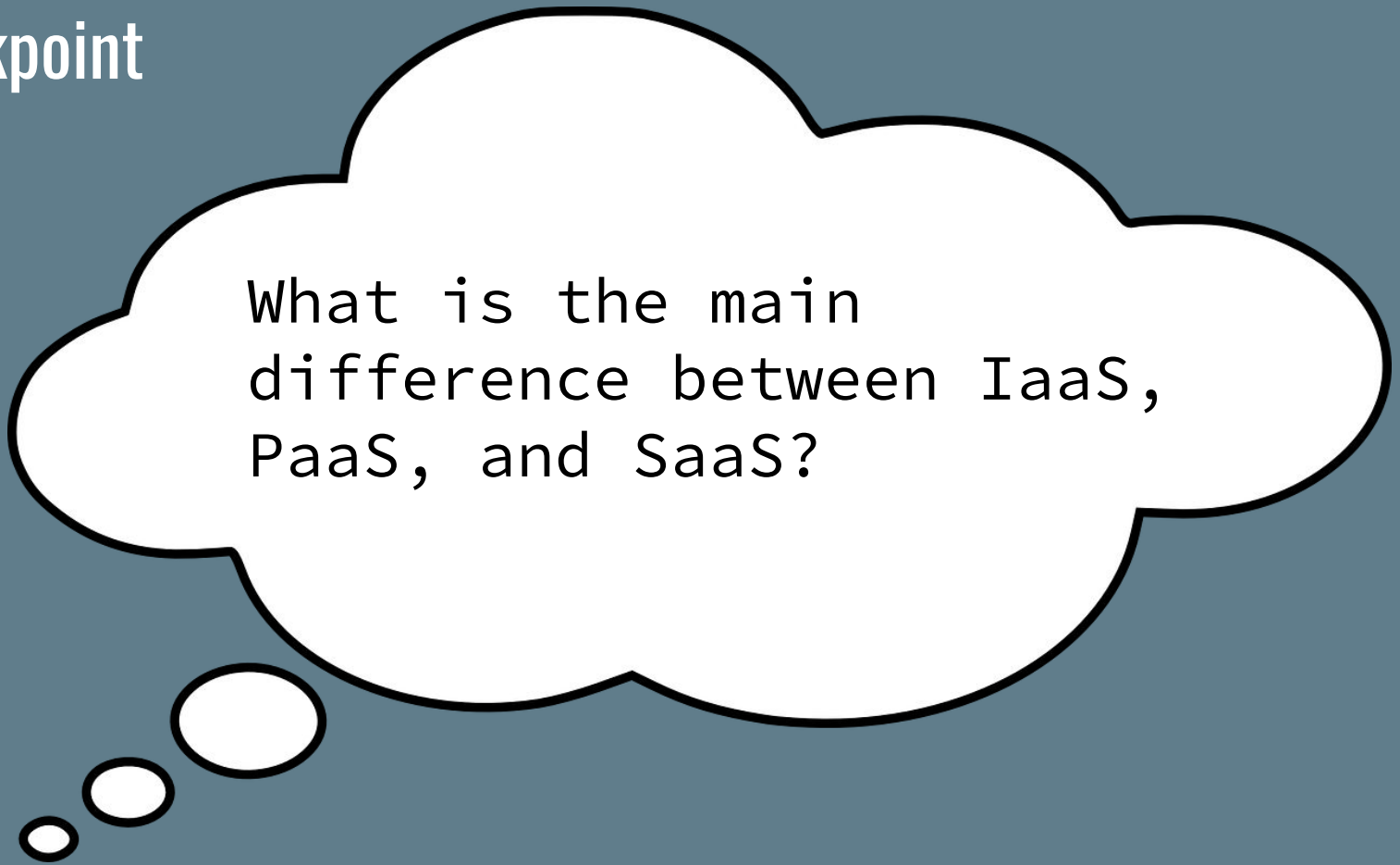



WiX
Creation
Business
Growth
Resources
Enterprise
Pricing
Support
Sign In
Create a website you're proud of
Discover the platform that gives you the freedom to create, design, manage and develop your web presence exactly the way you want.
Get Started
Created with Wix
Ceramic Planters
EXPLORE
Change Image
Ceramic Planters

Google Drive



Checkpoint



Cloud – Challenges and Risks

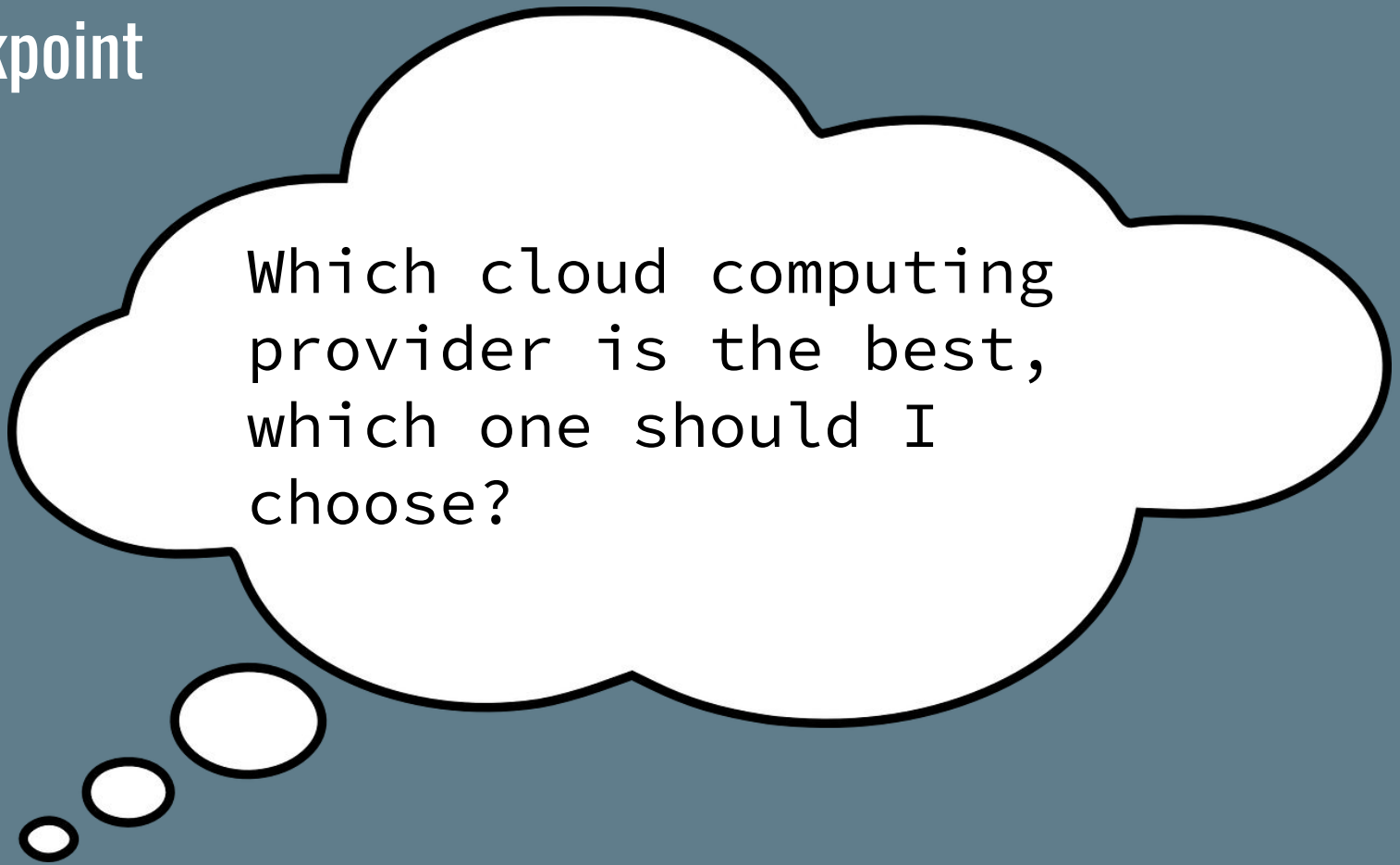
- Security, Privacy, Compliance
- Interoperability
- Cost
- Vendor Lock-In
- Companies do not change easily

Cloud Computing – Providers

Azure

Google Cloud

Checkpoint


Which cloud computing provider is the best, which one should I choose?

In Summary

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1. Cloud computing → three types of services: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS).
2. IaaS → computing infrastructure, such as servers, storage, and networking.
3. PaaS → access to a platform for developing, testing, and deploying applications.
4. SaaS → access to software applications that can be used over the Internet.
5. Cloud Computing comes with challenges and risks, but these can be mitigated with proper planning and execution.
6. There are many cloud providers to choose from, each with different features and pricing plans.

Group Activity: Find a Cloud Solution

1: Look at the company and the scenario you have been given.

2: Come up with a solution that uses at least one of the possible cloud services (IaaS, PaaS, or SaaS).

Scenarios

1. You are a small business owner who wants to start an online store. You have no experience with web development or hosting.
2. You are a startup that is developing a new mobile app. You need a place to test your app and deploy it when it is ready.
3. You are a large company with a lot of data. You need to store this data securely and have access to it when you need it.
4. You are an international marketing agency with clients in different time zones. You need to be able to share files and collaborate on projects in real time.
5. You are a consultancy firm that needs to host client data securely. You need to be able to access this data from anywhere in the world.

Scenarios

6. You are working for a government agency. You need to be able to share sensitive data with other agencies, but this data needs to be secure.
7. You are a small company that sells insurance and want to have your own website. You do not have the budget to hire a web developer.
8. You are the IT admin at a highschool. The school wants to start teaching students about coding, but does not have the budget to purchase computers for everyone.
9. You are a medical provider who wants to exchange medical records with other hospitals. However, you want to make sure that the records are secure.
10. You are a small business that wants a customer service solution that is easy to use and set up.