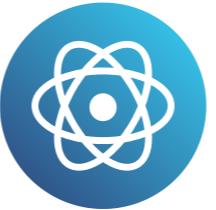


# Amazon Web Services

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# Disclaimer

How this chapter should be understood:

- overview of **main cloud providers**
- overview of their **market position**
- overview of their respective **main services**
- overview of their **strengths**
- examples of **customers**
- **case study**

How this chapter should *not* be understood:

- **not** an ever-lasting ground truth
- **not** an exhaustive view
- **not** a comprehensive customer analysis

# The cloud infrastructure market

## Includes

- PaaS (Platform as a Service) = \$32B
- IaaS (Infrastructure as a Service) = \$40B
- Private cloud = \$43B

## Does not include

- SaaS (Software as a Service)
- Cloud data centers
- Other cloud services

# AWS's position on the cloud infrastructure market



- Q4 2019 market share: 32.4%
- Q4 2019 revenue: \$9.8B
- Annual growth: 33.2%

# AWS cloud services

*Personal cloud*

Amazon drive



# AWS cloud services

*Personal cloud*

Amazon drive



Amazon photos



# AWS cloud services

*Personal cloud*

Amazon drive



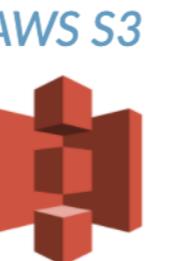
Amazon photos



*Professional cloud*

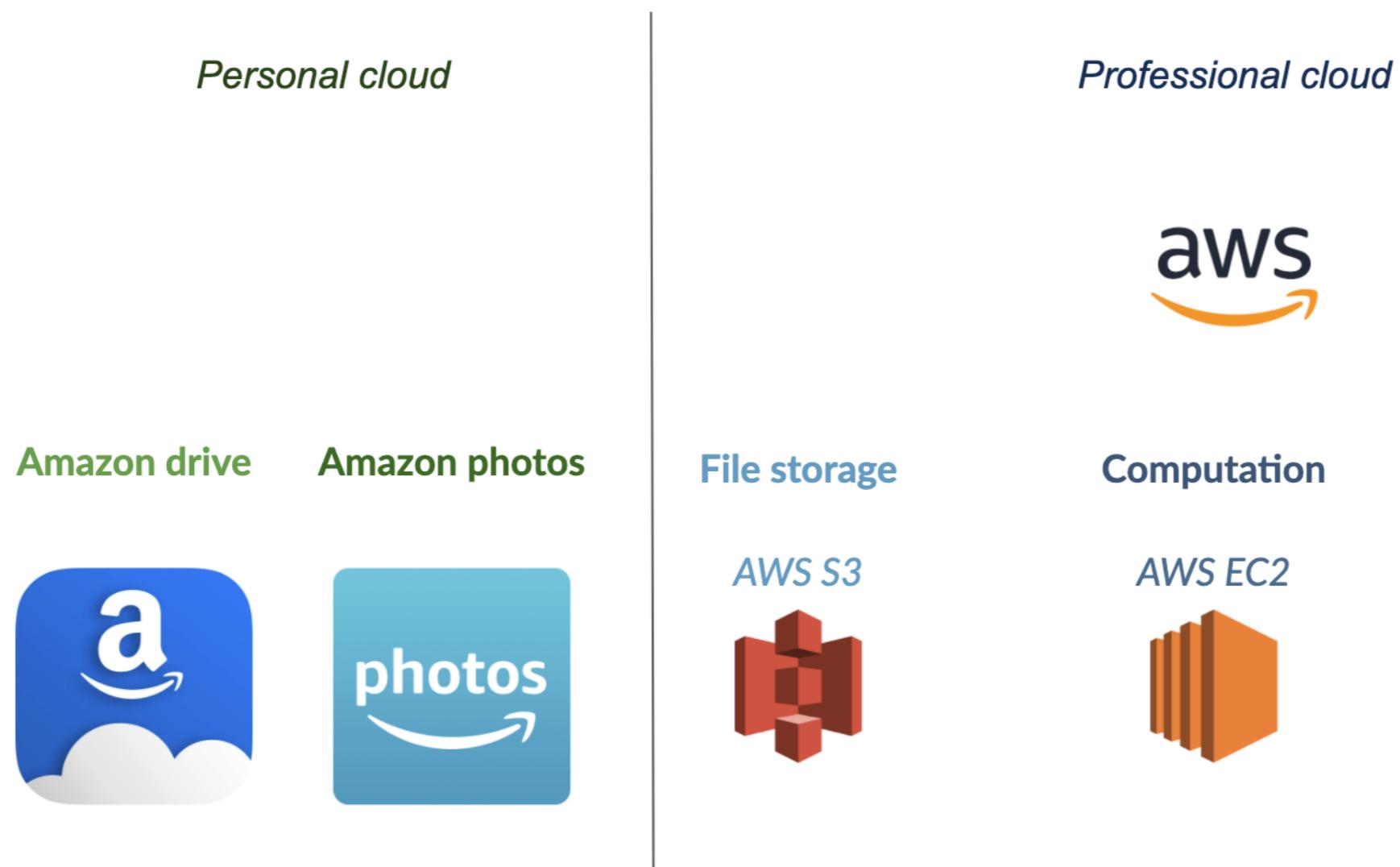


File storage



AWS S3

# AWS cloud services



# AWS cloud services



# AWS data services

- **Redshift** (analytics - data warehousing)
- **Kinesis** (real time data movement and analytics)
- **SageMaker** (predictive analytics and machine learning)

# AWS' strength

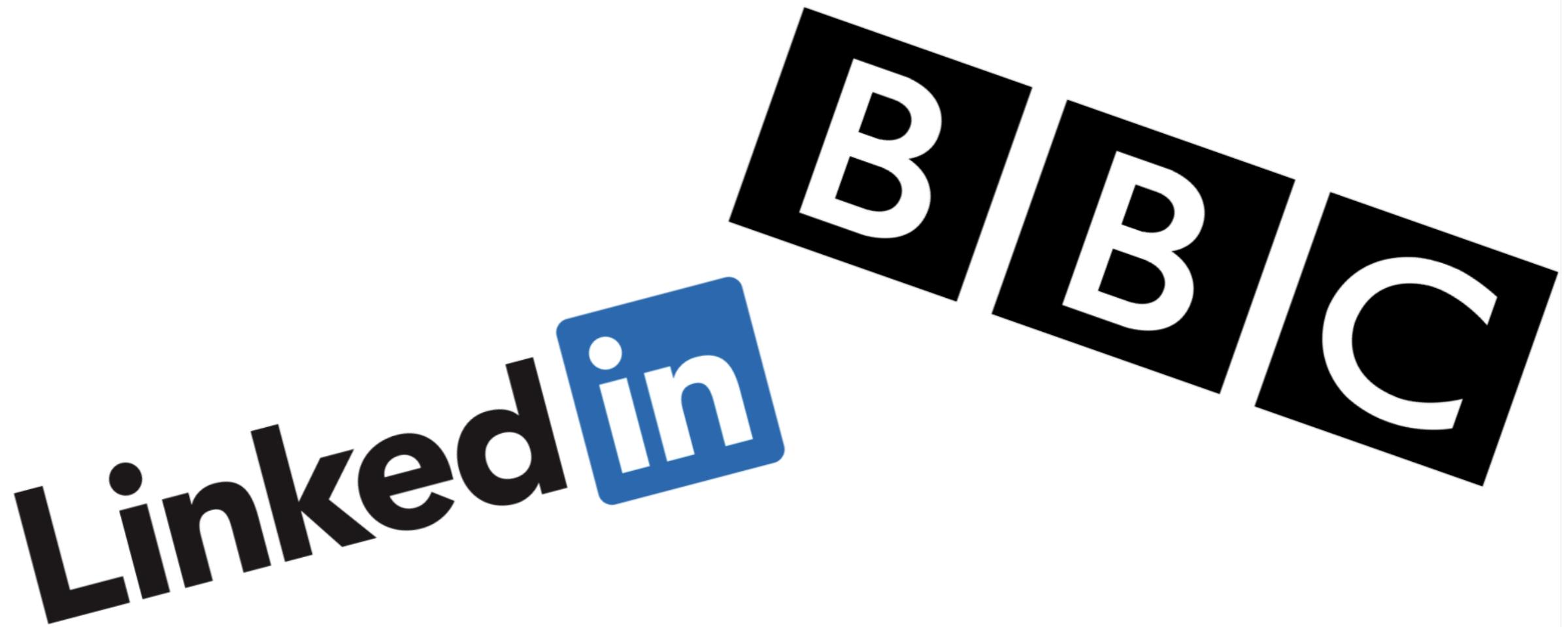
## First mover

- AWS launched in 2006 (Google Cloud in 2008, Microsoft Azure in 2010)  
--> breadth of services (computing, storage, databases, analytics, networking, mobile, developer tools, management tools, IoT, security and enterprise applications, analytics, machine learning or robotics)

# AWS customers



# AWS customers



# AWS customers



# AWS case study

**Company:** NerdWallet

**Problem:** Takes too long to deploy machine learning models

**Solution:**

- Amazon Sagemaker (cloud machine learning platform gathering machine learning processes)



# AWS case study

## Improvements:

- Reduce training times to days
- Reduce training costs by 75%
- Modernized data science engineering practices



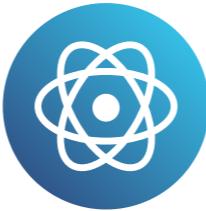
<sup>1</sup> <https://aws.amazon.com/solutions/case-studies/>

# Let's practice!

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# Microsoft Azure

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# Azure's position on the cloud infrastructure market



**Microsoft Azure**

- Q4 2019 market share: **17.6%**
- Q4 2019 revenue: **\$5.3B**
- Annual growth: **62.3%**

# Azure cloud services

*Personal cloud*

OneDrive



# Azure cloud services

*Personal cloud*

OneDrive



*Professional cloud*



File storage

Azure  
Blob Storage



# Azure cloud services

*Personal cloud*

OneDrive



*Professional cloud*



File storage

Azure  
Blob Storage



Computation

Azure  
Virtual Machines



# Azure cloud services

*Personal cloud*

**OneDrive**



*Professional cloud*



**File storage**

*Azure Blob Storage*



**Computation**

*Azure Virtual Machines*



**Databases**

*Azure SQL Database*



# Azure's data services

- **Data Lake Storage** (store data before cleaning)
- **Stream Analytics** (real-time analytics)
- **Machine Learning** (train and deploy machine learning models)

# Azure's strength

## Integration

- Integration with Microsoft products

--> benefits from customer loyalty, top-of-mind choice

# Azure customers



# Azure customers



# Azure customers



# Azure case study

Organization: Ottawa Hospital

Needs: Cost effective and secure disaster recovery solution (continue vital operations after a disaster)

Solution:

- Microsoft IaaS (secure, scalable environment)
- Azure Storage (medical imaging data)
- Azure Site Recovery (automatically deploy recovery processes)



# Azure case study

## Improvements:

- New secure, up-to-date, policy compliant disaster recovery site in under 3 months
- Compliant with data privacy regulations
- Saved ~50% on disaster recovery costs



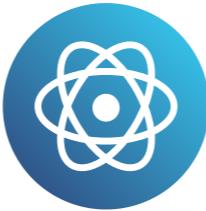
<sup>1</sup> <https://customers.microsoft.com/>

# Let's practice!

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# Google Cloud

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# Google Cloud's position on the cloud infrastructure market



## Google Cloud

- Q4 2019 market share: **6%**
- Q4 2019 revenue: **\$1.8B**
- Annual growth: **67.6%**

# Google Cloud services

*Personal cloud*

**Google Drive**



# Google Cloud services

*Personal cloud*

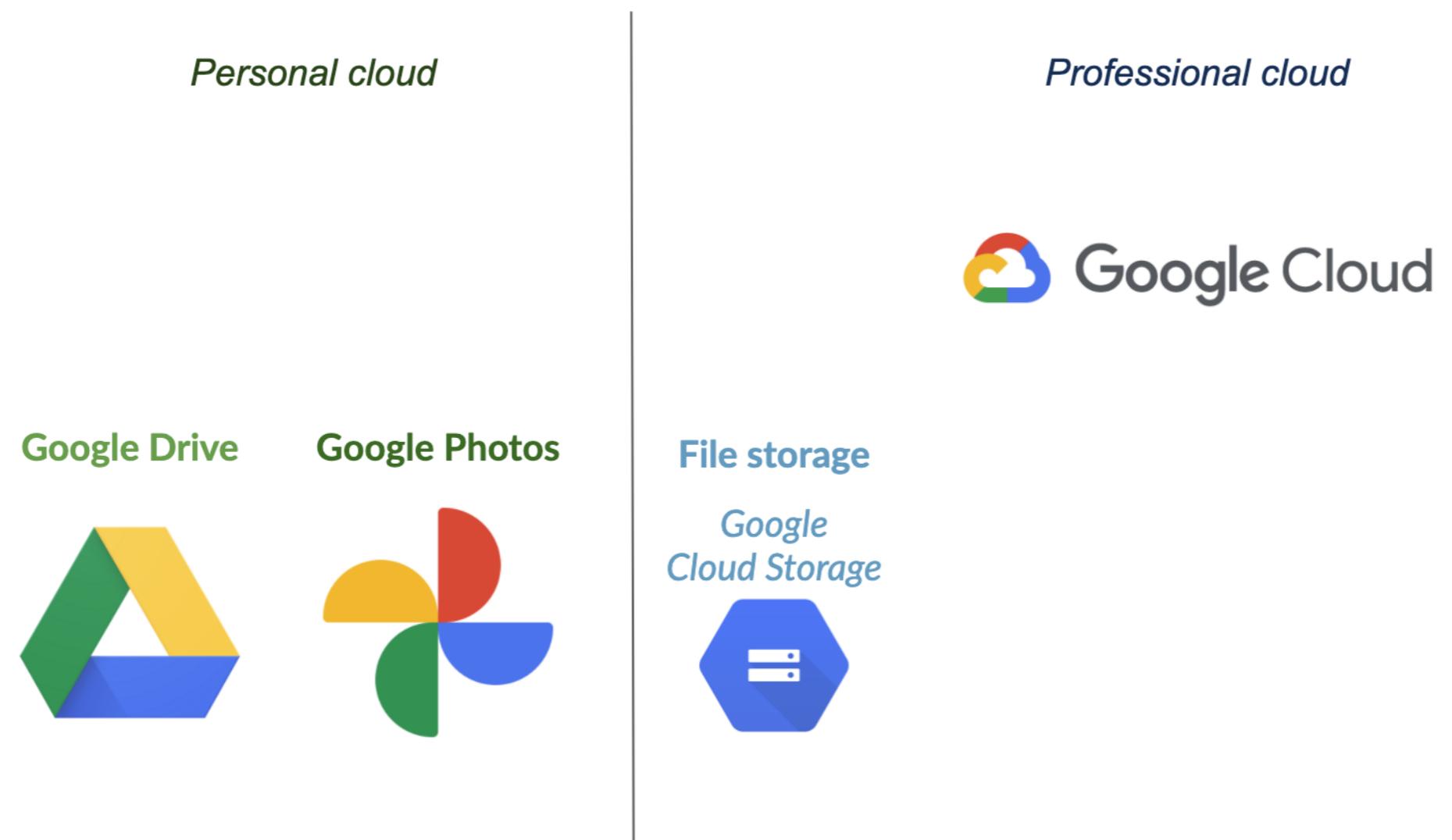
**Google Drive**



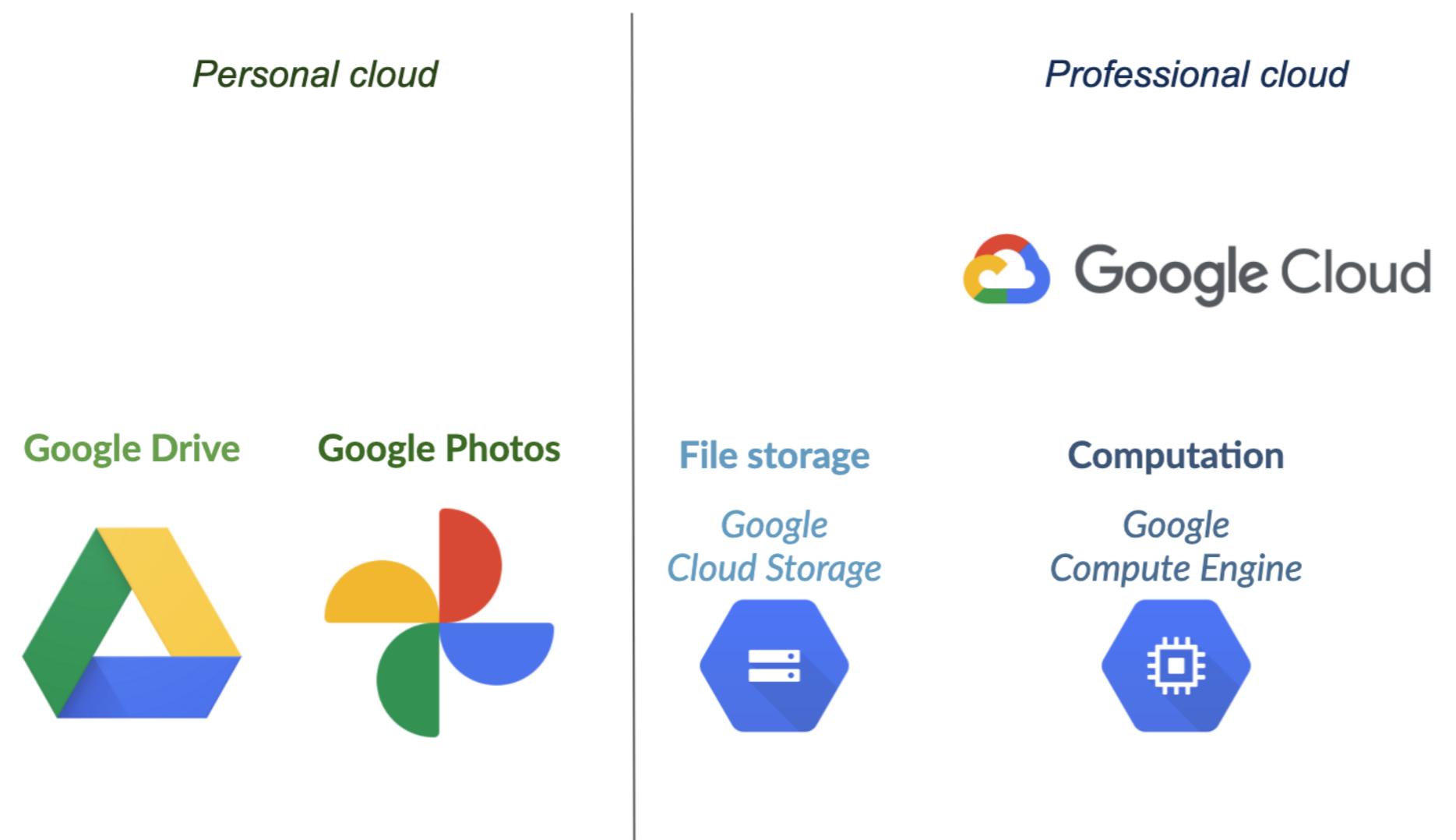
**Google Photos**



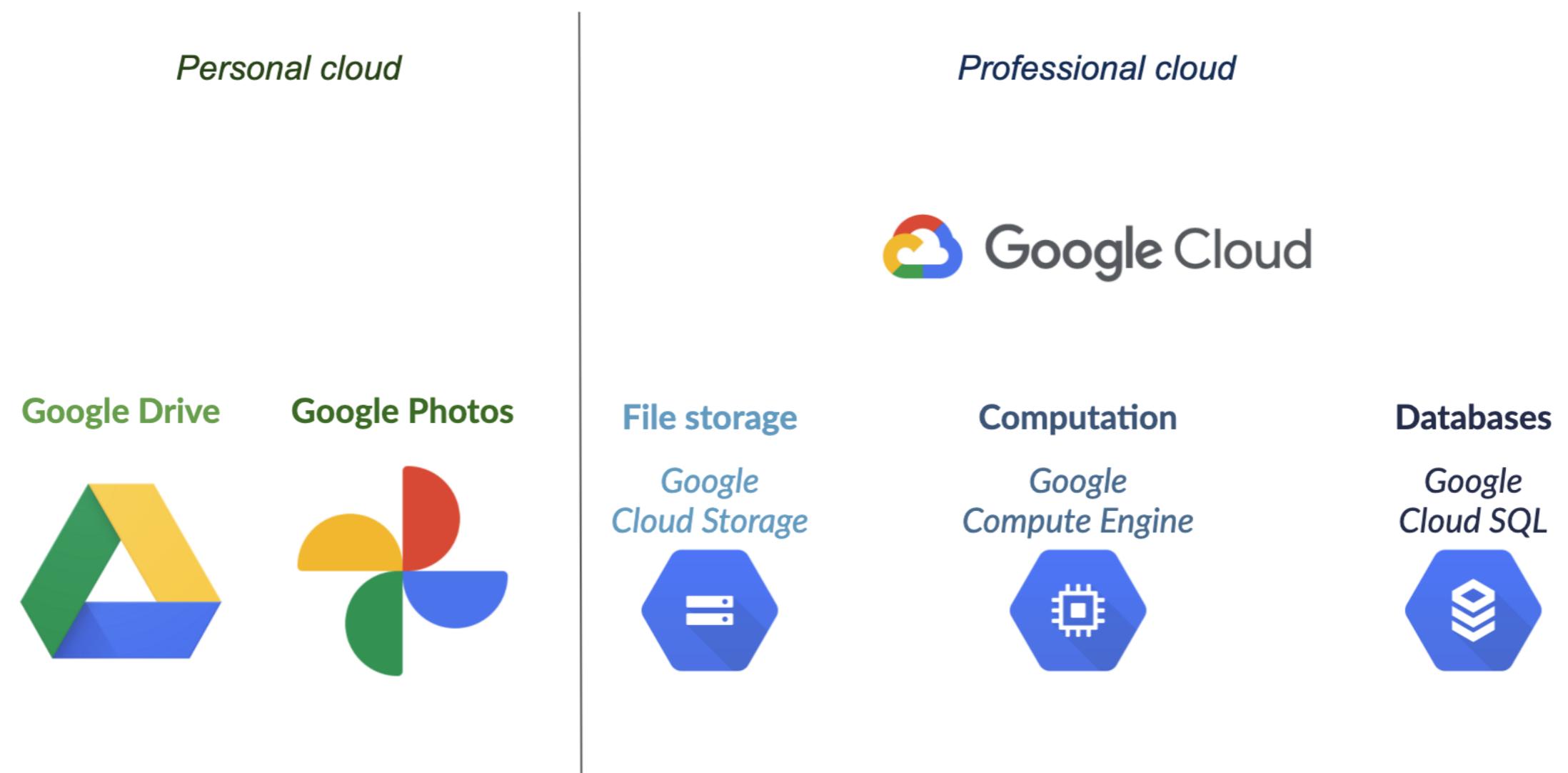
# Google Cloud services



# Google Cloud services



# Google Cloud services



# Google Cloud data services

- **Big Query** (data warehouse)
- **Dataflow** (batch and stream data processing)
- **AutoML** (machine learning model training and development)

# Google Cloud's strength

## Multicloud

- Google Cloud Anthos

--> Run hybrid multicloud solutions: manage and deploy across several cloud providers

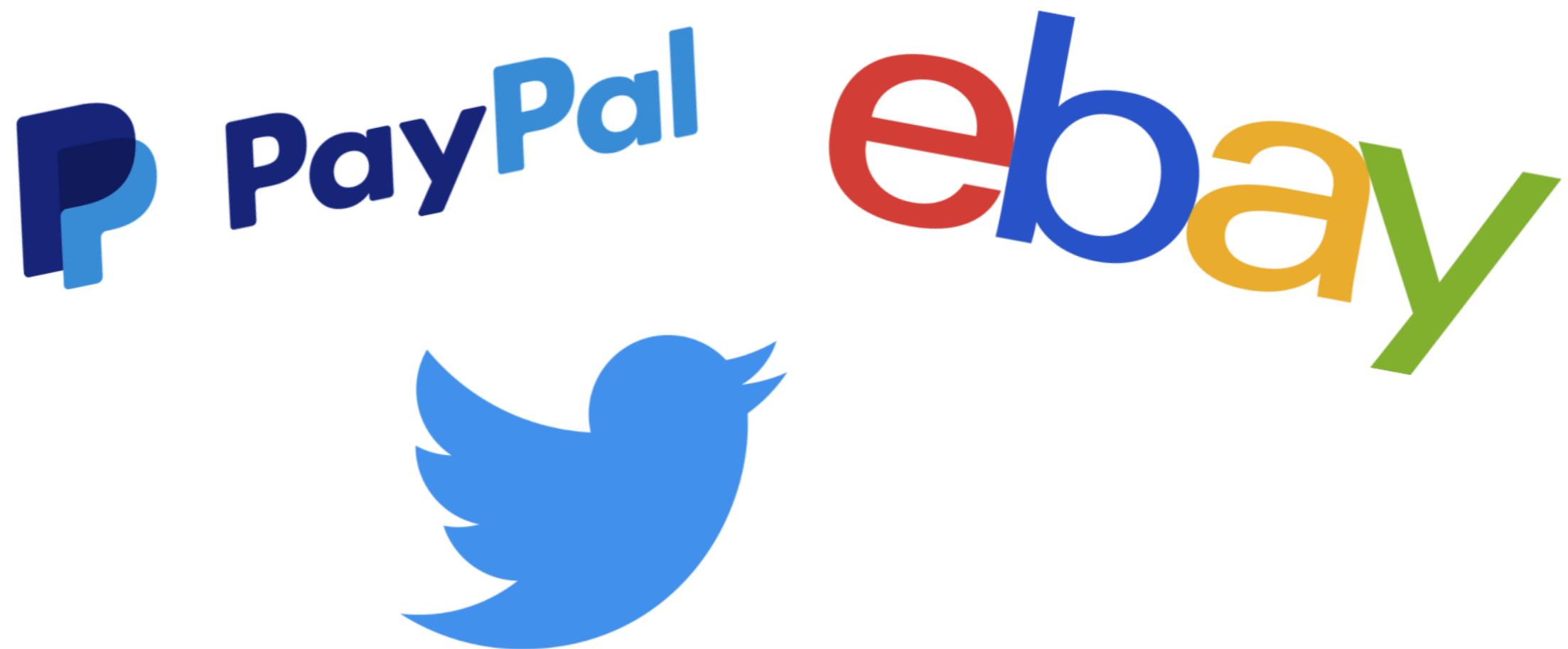
# Google Cloud customers



# Google Cloud customers



# Google Cloud customers



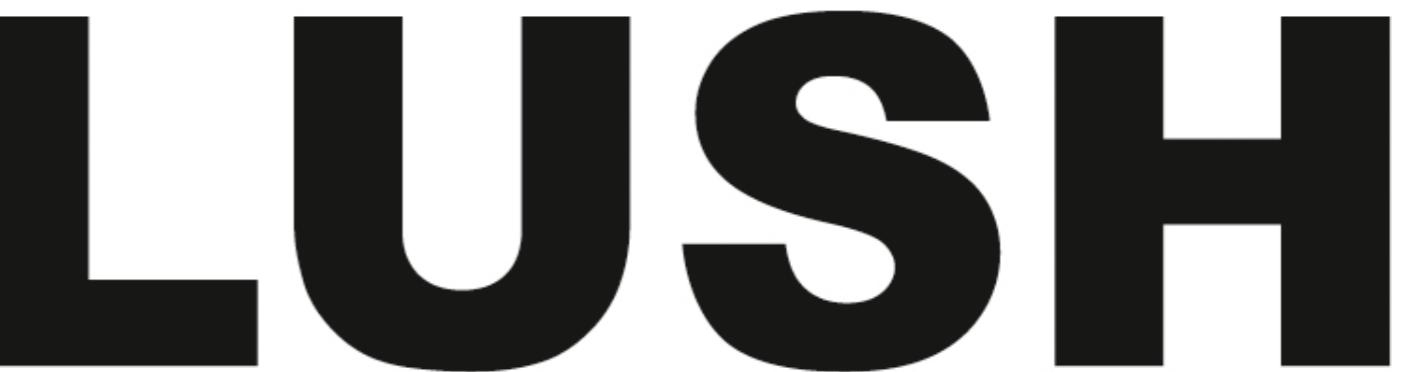
# Google Cloud case study

Organization: Lush

Needs: Improve e-commerce platform availability and stability during peak loads

Solution:

- Migrate entire global infra to Google Cloud
- Google Cloud Compute Engine (quickly test and provision environments during migration)
- Customer and product data on Google Cloud SQL



# Google Cloud case study

## Improvements:

- No outage during Boxing Day
- 40% reduction in hosting costs
- Later deployed an image recognition app to provide information on their product and reduce plastic packaging on Google Cloud AI platform

LUSH

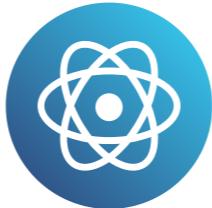
<sup>1</sup> <https://cloud.google.com/customers/lush/>

# Let's practice!

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# Other actors and final thoughts

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# Alibaba's position on the cloud infrastructure market



- Q4 2019 market share: 5.4%
- Q4 2019 revenue: \$1.6B
- Annual growth: 71.1%

# Alibaba Cloud services

*Personal cloud*



# Alibaba Cloud services

*Personal cloud*



*Professional cloud*

 **Alibaba Cloud**

**File storage**

*Object Storage  
Service*



# Alibaba Cloud services

*Personal cloud*



*Professional cloud*

 **Alibaba Cloud**

**File storage**

*Object Storage Service*



**Computation**

*Elastic Compute Service*



# Alibaba Cloud services

*Personal cloud*



*Professional cloud*

 **Alibaba Cloud**

**File storage**

*Object Storage Service*



**Computation**

*Elastic Compute Service*



**Databases**

*ApsaraDB  
RDS*



# Alibaba Cloud data services

- E-MapReduce (big data processing)
- QuickBI (analytics and visualization)
- Machine Learning Platform for AI

# Alibaba Cloud customers



# Alibaba Cloud customers



Schneider  
Elec<sup>t</sup>ric

# Alibaba Cloud customers



Schneider Electric

# IBM's position on the cloud infrastructure market



- Q4 2019 market share: **1.8%**
- Q4 2019 estimated revenue: **\$530M**

# IBM Cloud services

*Personal cloud*



# IBM Cloud services

*Personal cloud*



*Professional cloud*



**File storage**

*IBM Cloud  
Object Storage*



# IBM Cloud services

*Personal cloud*



*Professional cloud*



**File storage**

*IBM Cloud  
Object Storage*



**Computation**

*IBM Cloud  
Virtual Server*



# IBM Cloud services

*Personal cloud*



*Professional cloud*



**File storage**

*IBM Cloud  
Object Storage*



**Computation**

*IBM Cloud  
Virtual Server*



**Databases**

*IBM Cloud  
DB2*



# IBM Cloud data services

- **Watson Knowledge Catalog** (find, curate, categorize and share data)
- **SPSS Statistics** (analytics with SPSS)
- **Watson Machine Learning** (train and deploy machine learning models)

# IBM Cloud customers



# IBM Cloud customers



# IBM Cloud customers



# Oracle's position on the cloud infrastructure market



- Smaller market share
- Exact numbers not published

# Oracle Cloud services

*Personal cloud*



# Oracle Cloud services

*Personal cloud*



*Professional cloud*

**ORACLE**

File storage

Object Storage



# Oracle Cloud services

*Personal cloud*



*Professional cloud*

**ORACLE**

**File storage**

*Object Storage*



**Computation**

*Virtual Machines*



# Oracle Cloud services

*Personal cloud*



*Professional cloud*

**ORACLE**

**File storage**

*Object Storage*



**Computation**

*Virtual Machines*



**Databases**

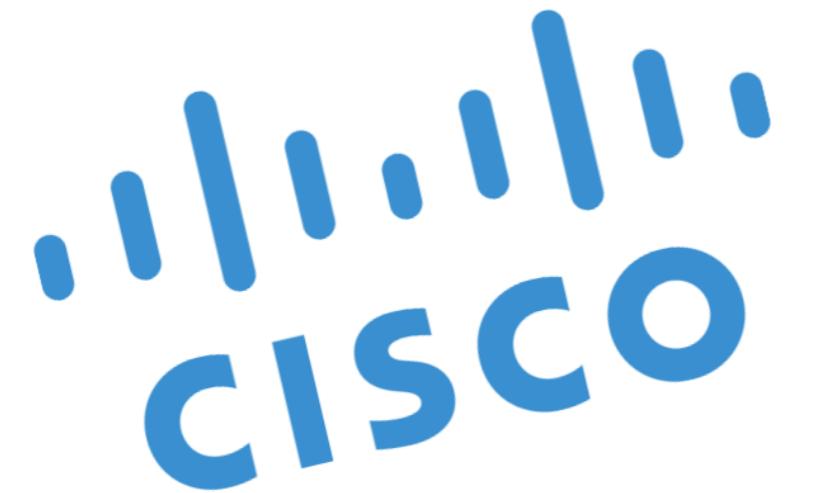
*MySQL Database Service*



# Oracle Cloud data services

- **Autonomous Database** (data marts, data lakes, and batch data processing)
- **Analytics Cloud** (automated data preparation, visualization, forecasting and reporting)
- **Machine Learning** (train and deploy machine learning models)

# Oracle Cloud customers



# Oracle Cloud customers



# Oracle Cloud customers



# Keep in mind!

- Fierce competition: **things will move**
- Including SaaS tells a **different story**

# Making your case

- Best provider is the one meeting your **needs**:
  - **Current infrastructure costs**
  - Cost of running a **data center, physical hardware, storage**
  - Cost of **applications** (deprecate, migrate, rebuild)
  - Cost of **hiring** cloud specialists
  - **Benefits** for company and customers
  - **Risks** (regulation, security, disaster, vendor lock-in)

# Future of the cloud

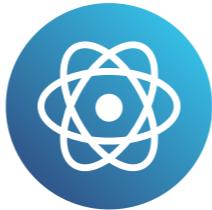
- Growing amount of data
- AI needs computing resources
- Smart cities need an underlying infrastructure
- Serverless architectures are more and more popular

# Let's practice!

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# Congratulations!

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# Chapter 1 - Introduction to cloud computing

- How cloud computing **works**
- Why it is **powerful**
- Main service models (IaaS, PaaS, SaaS)

# Chapter 2 - Cloud strategies

- Deployment models (private, public, and hybrid)
- Regulations
- Cloud roles

# Chapter 3 - The cloud infrastructure market

- Market's major players
- Their offerings
- Their customers

# Next steps

- Explore further to find the right service for you
  - Talk with cloud expert
  - Explore the cloud provider websites
  - Get in touch with cloud providers
- DataCamp's cloud-focused courses

# Thank you!

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