WDSS Virtual Workshop

An Introduction to Cloud Computing

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Contents

1 **What is Cloud Computing?**
History and current use cases of cloud computing
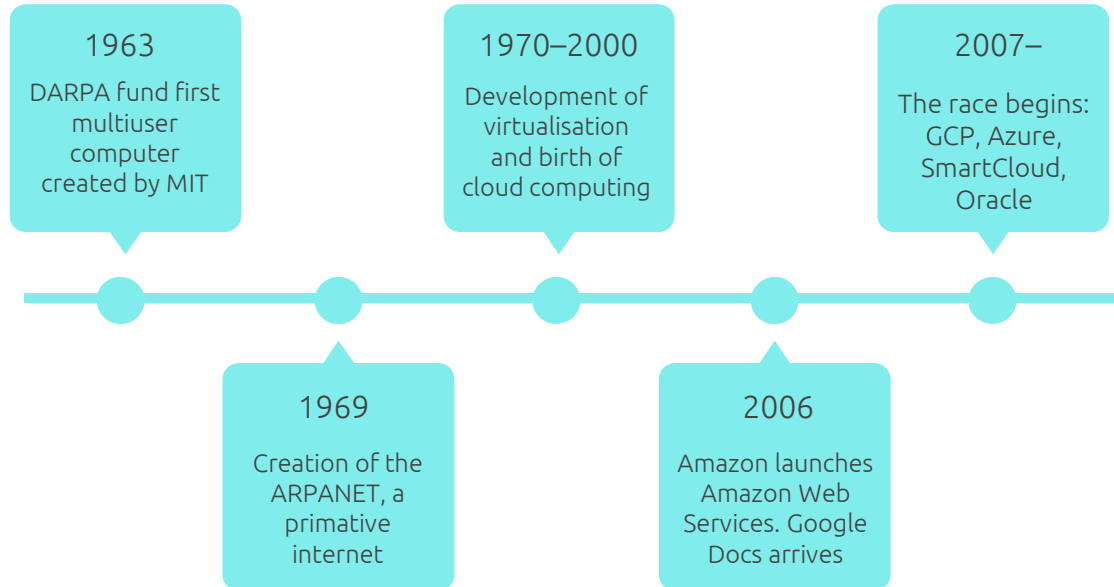
2 **Practical Example**
Creating a daily news mailer using the Google Cloud Platform

3 **Next Steps**
Further reading and ways to learn more about cloud computing

A History of Cloud Computing

1963

DARPA fund first multiuser computer created by MIT

1970–2000

Development of virtualisation and birth of cloud computing

2007–

The race begins: GCP, Azure, SmartCloud, Oracle

1969

Creation of the ARPANET, a primative internet

2006

Amazon launches Amazon Web Services. Google Docs arrives

The Current State of Play

Percentage of Web Running on AWS **?**	Three main players **AWS** **GCP** **Azure**
Percentage of Global IT Budget (2019) **37%**	A truely incredible number of services available (more on this later)

The Current State of Play

Percentage of Web Running on AWS

~50%

Three main players

AWS
GCP
Azure

Percentage of Global IT Budget (2019)

37%

A truely incredible number of services available (more on this later)

Why Cloud Computing?

- No infrastructure/maintainence costs
- Greater efficiency -> lower prices
- Fast scalabality
- High availability
- Access to latest hardware
- Ease of use

The Three Giants of Cloud Computing

AWS

Largest breadth and depth of services

Massive scales provides economic benefits although price model is quite bullish

GCP

Expertise with open source technologies (e.g. Kubernetes, Elastic)

Offers innovative features such as TPUs

Azure

Business friendly cloud computing, focused on security and intergrations

Provides easy mobility with on-premise services

(A Few) Cloud Computing Services

Service	AWS	GCP
Computational power and running applications	Elastic Cloud Compute (EC2)	Compute Engine/ App Engine
Independent storage of data	Simple Storage Service (S3)	Cloud Storage
Mountable storage of data	Elastic Block Store (EBS)	Persistent Disk
Databases	Relational Database Service (RDS) [and more]	Cloud SQL, Firestore, BigTable
Serverless computing	Lambda	Cloud Functions
Event scheduling	EventBridge	Cloud Scheduler
Crowdsourced data labelling	Mechanical Turk	-

Getting Our Hands Dirty

Use GCP Cloud Scheduler and Cloud Functions to create a daily newsletter with headlines scraped from the BBC

Learning More

- Watch out for scammy online courses
- AWS and GCP offer their own training with optional examination
- Take advantage of <u>free</u> <u>tiers</u> (but use a dummy credit card)

(Free) Project Ideas

Experiment with free tiers of text-to-speech and translation APIs

Create a database of your subscriptions with email notifications on renewal

Build a low power webapp using Flask, Shiny or Node

Create a lecture note search engine with Elasticsearch

Cloud Computing at WDSS

Research Projects

- WDSS research projects
- Access to powerful cloud computing for free*
- Follow our socials for summer projects
- Come to our code nights to discuss starting your own project

Exec Roles

- Currently looking for cloud architect and backend developer roles.
- Training and setup help provided.
- Expected to have moderate knowledege of Linux, Docker, and Python

Thank You

Any Questions?

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