



**NANYANG
TECHNOLOGICAL
UNIVERSITY**
SINGAPORE

Introduction To Cloud Platform

Cloud Infrastructure Engineering

**Nanyang Technological University
& Skills Union - 2022/2023**

Course Content

- Quick Check-In
- Dive into the basics of Cloud Providers like AWS & GCP
- Explore the differences between the Cloud Providers
- Explore the products in the Cloud Provider's Platform

Time	What	How or Why
7:15pm - 7:30pm	Part 1 - Presentation	Introduction To AWS
7:30pm - 7:45pm	Part 2 - Presentation	Introduction To GCP
7:45pm - 7:55pm	Part 3 - Presentation	Compare AWS & GCP
7:55pm - 8:05pm	Break	
8:15pm - 8:55pm	Part 4 - Presentation	Explore AWS Products & Console
8:55pm - 9:00pm	Assignment Briefing	
9:00pm - 10:00pm	Assignment & Wrap Up	

Introduction To Google Cloud Platform



Brief History of GCP

Started in 2008.

In April 2008, GCP released its first service App Engine in preview mode.

Fast forward today, GCP is widely used by major companies like Snapchat, Airbnb, Zillow, Bloomberg, and PayPal.

Competitive Advantage of GCP

Quality of Internal Development Team

Did you know that Google was responsible for creating Kubernetes before donating the project to CNCF?

Competitive Advantage of GCP

Impressive Data Tools

TensorFlow, BigQuery, Cloud IOT, Vertex AI, Vision AI and more



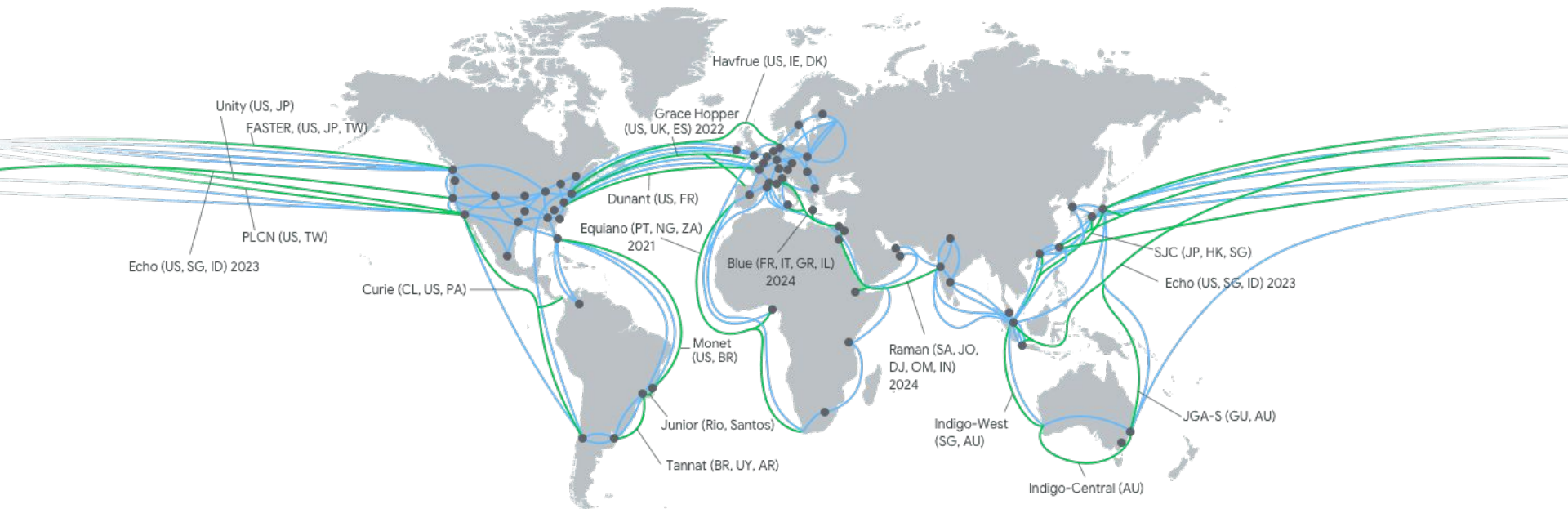
Competitive Advantage of GCP

Powerful Network

Powered by Google's impressive global connectivity, they boast a strong network across regions.

Competitive Advantage of GCP

Powerful Network



GCP Summed Up



Introduction to Amazon Web Services



Brief History of AWS

AWS was first to market with a **modern cloud infrastructure service** when it launched **Amazon Elastic Compute Cloud (EC2)** in August, 2006.

Since then, they have captured **34% market share** of the Cloud Computing's \$200bn industry.

Top customers include Netflix, Pfizer, Walt Disney, Sony, Samsung etc.

Competitive Advantage of AWS

Ease of Use

AWS has made it really easy for any user to get started with their services

Competitive Advantage of AWS

Large Market Share

AWS has been the number 1 cloud provider for many years now.

AWS Summed Up



Introduction to Services



Compute Instances

AWS - Elastic Compute Cloud (EC2)

Offers the broadest and deepest compute platform, with over 500 instances and choices for your workloads.



Amazon EC2

GCP - Compute Engine

Secure and customizable compute service that lets you **create and run virtual machines** on Google's infrastructure on an IaaS model.



Google
Compute
Engine

PaaS Offerings

AWS - Elastic Beanstalk

Easy-to-use service for deploying and scaling web applications and services developed with any programming languages & docker.



GCP - App Engine

App Engine - Standard & Flexible - supports popular development languages with a range of developer tools.



App Engine

Serverless

AWS - Lambda

Serverless, event-driven compute service that lets you run code for virtually any type of application or backend service without provisioning servers.



GCP - Cloud Functions

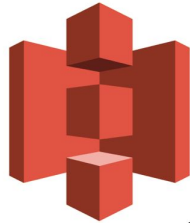
Run your code in the cloud with no servers or containers to manage with our scalable, pay-as-you-go functions as a service (FaaS) product.



Storage - Cloud Storage

AWS - Simple Storage Solution (S3)

Object storage service offering industry-leading scalability, data availability, security, and performance



Amazon S3

GCP - Cloud Storage

Object storage for companies of all sizes. Store any amount of data. Retrieve it as often as you'd like.



Database - Relational

AWS - **Aurora**

Built-in security, continuous backups, serverless RDBMS, up to 15 read replicas, and automated multi-Region replication.



GCP - **Cloud SQL**

Fully managed relational database service for MySQL, PostgreSQL, and SQL Server with rich extension collections, configuration flags, and developer ecosystems.

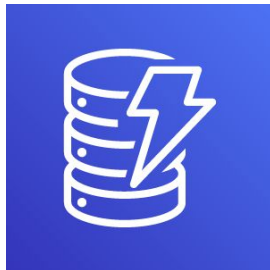


Cloud SQL

Database - Non-Relational

AWS - **Dynamodb**

Fully managed, serverless,
key-value NoSQL database
designed to run high-performance
applications at any scale.



GCP - **Cloud BigTable**

A fully managed, scalable NoSQL
database service for large
analytical and operational
workloads with up to 99.999%
availability.



Containers - Kubernetes

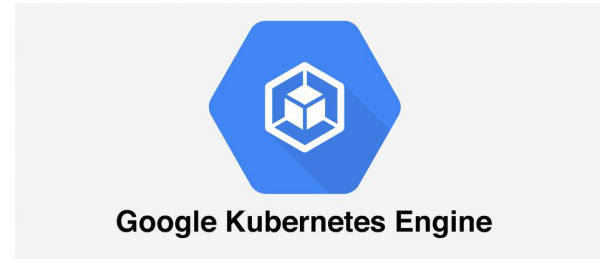
AWS - Elastic Kubernetes Service (EKS)

Fully managed Kubernetes service to run Kubernetes in the AWS cloud and on-premises data centers.



GCP - Google Kubernetes Service (GKS)

Industry's first fully managed Kubernetes service with full Kubernetes API, 4-way autoscaling, release channels, and multi-cluster support.



Summary



Virtual Servers
Platform-as-a-Service
Serverless Computing
Docker Management
Kubernetes Management
Object Storage
Archive Storage
File Storage
Global Content Delivery
Managed Data Warehouse



Instances
Elastic Beanstalk
Lambda
ECS
EKS
S3
Glacier
EFS
CloudFront
Redshift



VM Instances
App Engine
Cloud Functions
Container Engine
Kubernetes Engine
Cloud Storage
Coldline
ZFS / Avere
Cloud CDN
Big Query



VMs
Cloud Services
Azure Functions
Container Service
Kubernetes Service
Block Blob
Archive Storage
Azure Files
Delivery Network
SQL Warehouse

Overview

Google Cloud Platform

Big Data



Compute



Dev Tools



Identity & Security



Machine Learning



Management Tools



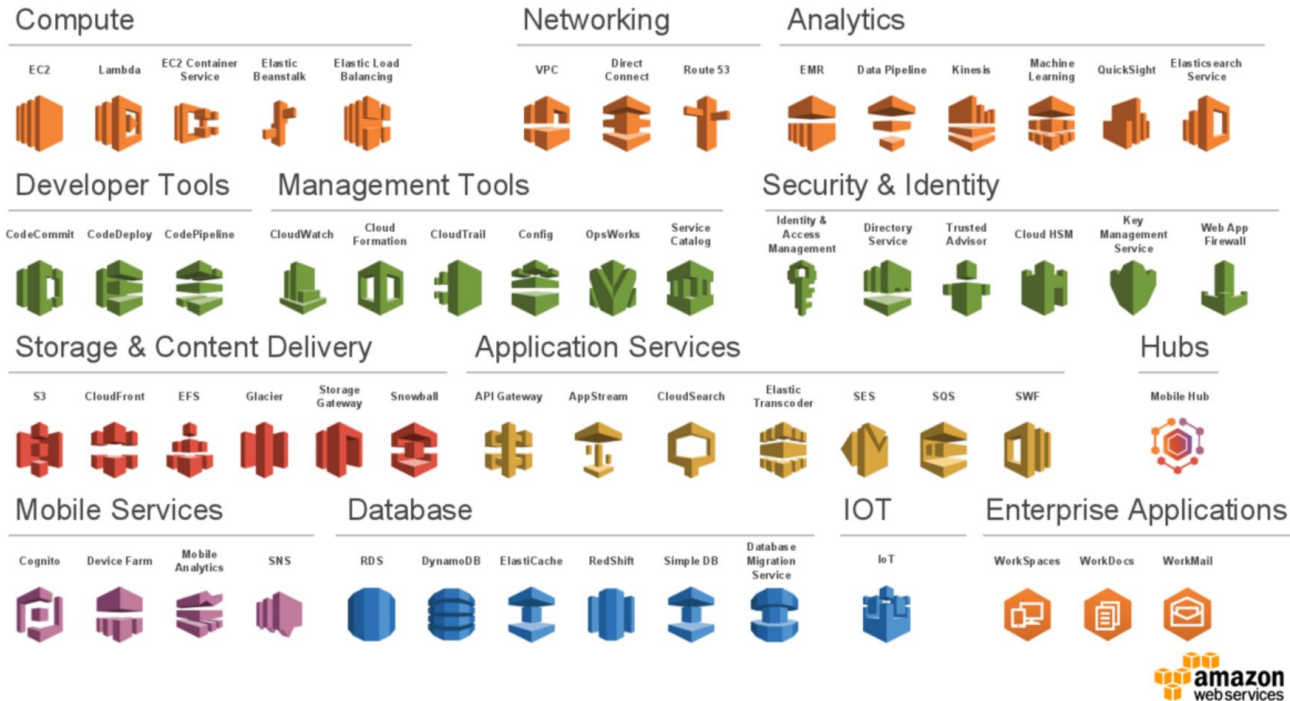
Networking



Storage and Databases



Overview



Additional Activity

What would you use the below resources for?

1. Compute Engine
2. Cloud Functions
3. Cloud Storage
4. Cloud SQL
5. Cloud Spanner

Additional Activity

What would you use the below resources for?

1. AWS EC2
2. AWS S3
3. AWS Aurora
4. AWS Lambda
5. AWS Elastic Beanstalk

GCP vs AWS



Market Share

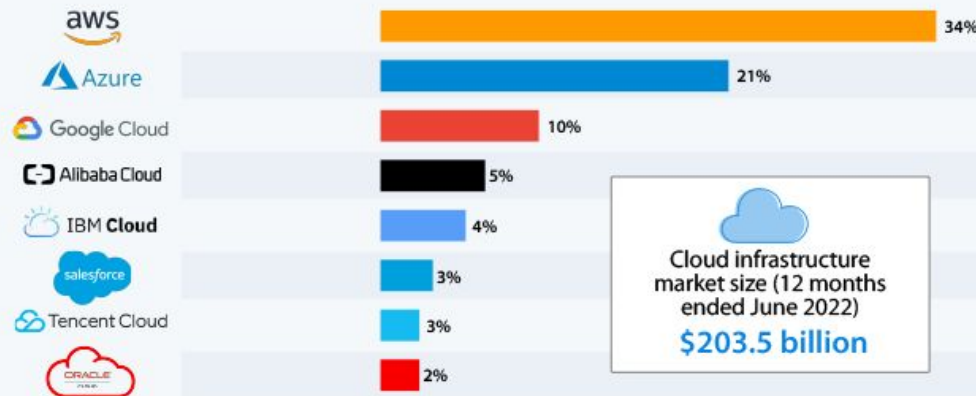
In Q3 2022, global cloud infrastructure service spending climbed to \$57 billion, bringing the industry total for the trailing twelve months to \$217 billion.

As the following chart shows, Amazon, Microsoft and Google accounted for two thirds of cloud infrastructure revenues in the three months ended Sept. 30, with the eight largest providers controlling more than 80 percent of the market.

Market Share

Amazon Leads \$200-Billion Cloud Market

Worldwide market share of leading cloud infrastructure service providers in Q2 2022*



* includes platform as a service (PaaS) and infrastructure as a service (IaaS) as well as hosted private cloud services.

Source : Synergy Research Group

Cloud infrastructure
market size (12 months
ended June 2022)
\$203.5 billion



statista

Pricing

Very identical pricing strategy:

AWS Reserved Instances & Spot Instances vs GCP Committed Use & Preemptible Instances

Initial Bonus Packages (AWS Free Tier vs GCP \$300 Bonus)

That said, GCP prides itself on lower costs compared to AWS.

Features & Services

Google Cloud offers around **95 different services**, whereas AWS offers **more than 200**.


Many of the additional services are important for large enterprises with specific requirements for their cloud environments, although Google Cloud does offer a core range of services that meet the needs of most businesses.

FYI: GCP is known to be developer-centric whereas AWS is more for the masses

Global Reach

 **35**
REGIONS

 **106**
ZONES

 **176**
NETWORK EDGE LOCATIONS

AVAILABLE IN
 **200+**
COUNTRIES AND TERRITORIES

COMING SOON! Google Cloud will continue expanding into the following regions: Doha (Qatar), Turin (Italy), Berlin (Germany), Dammam (Kingdom of Saudi Arabia), Mexico, Malaysia, Thailand, New Zealand, Greece, Norway, South Africa, Austria and Sweden.

30 Launched Regions
each with multiple Availability Zones
(AZs)

96 Availability Zones

410+ Points of Presence
400+ Edge Locations and 13
Regional Edge Caches

Free Tier

AWS divides its free tier promotions between selected services for 30-day, 12-month, and always-free periods, subject to consumption limits.

By comparison, Google Cloud keeps it simple by offering always-free tiers on 24 products and services—also subject to consumption limits.

Which Is Better?

You Decide...

AWS is perhaps the best choice for large enterprises with specific requirements, for multinational companies with a presence in many countries, and for businesses outside of the United States and Europe.

AWS also offers excellent levels of support, availability, and greater redundancy.

Activity

Learner:

- Clean up AWS.
- Remove/delete/terminate all service/ resources that created.

Instructor

- Clean up AWS.
- Remove/delete/terminate all service/ resources that created.
- Check the AWS account after learner clean up.

What's Next?

