



BATCH : 146 - 149
LESSON : AWS
DATE : 31.07.2023
SUBJECT : AWS-Cloud Intro

ZOOM GİRİŞLERİNİZİ LÜTFEN **LMS** SİSTEMİ ÜZERİNDEN YAPINIZ





Cloud Computing and AWS Intro



Table of Contents

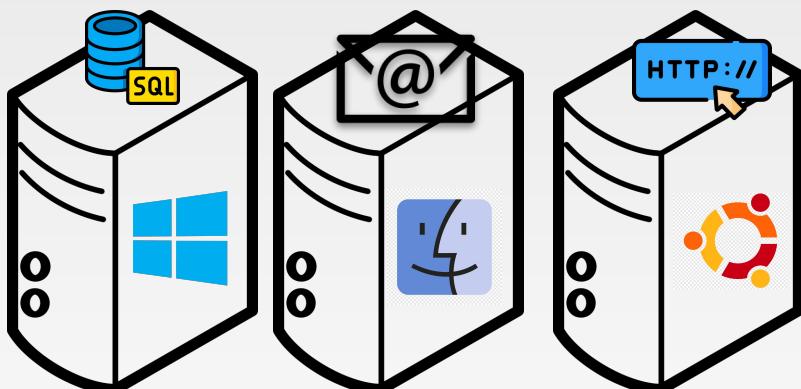
- Virtualization concept
- Introduction to Cloud Computing
- Cloud Computing Architecture
- Deployment Models
- Service Model

Introduction to Cloud Computing

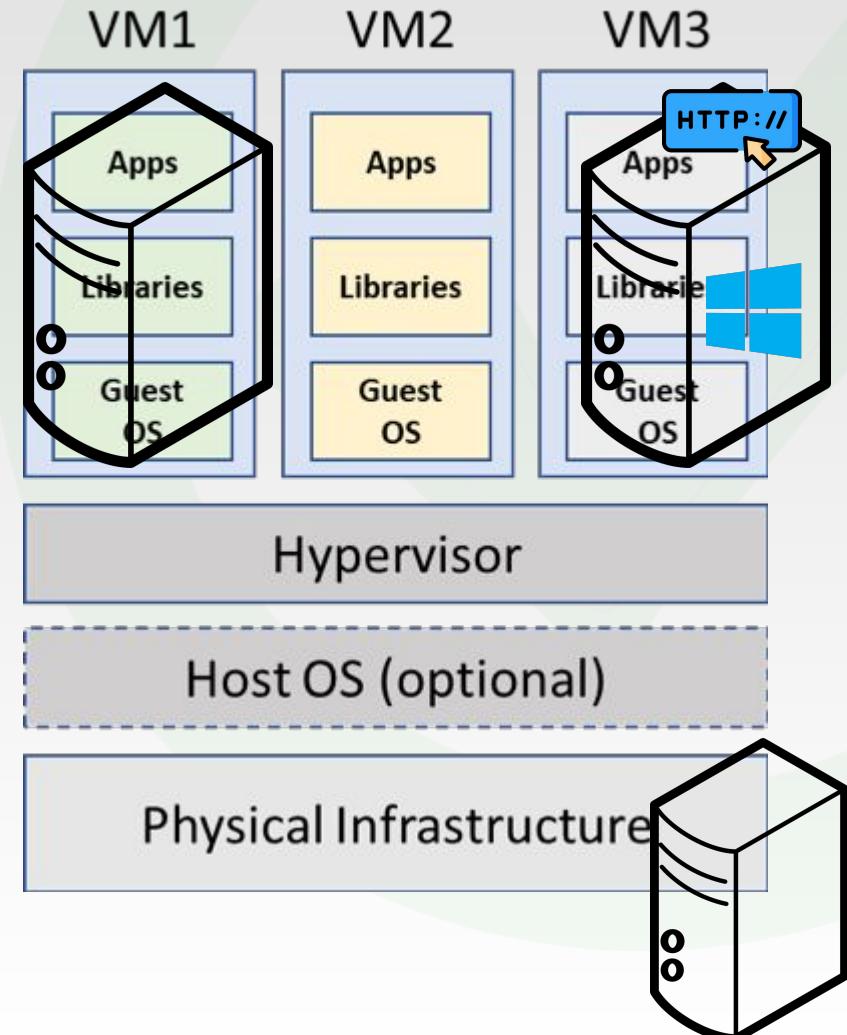


Introduction to Cloud Computing Virtualization

What is Virtualization?



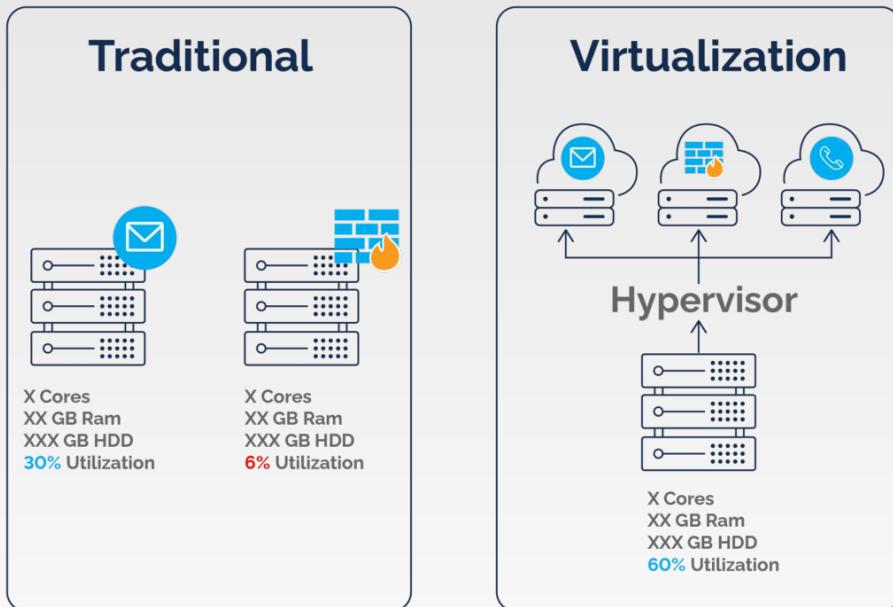
On-Premise, physical machines





Introduction to Cloud Computing Virtualization

Why Virtualization?



- Benefits of Virtualization
- **Reduced expenses:** Costs are reduced
 - **Flexibility:** Easily add or remove environment
 - **High Availability:** Setup redundant environments
 - **Increased Efficiency:** Spend less time maintaining hardware
 - **DevOps easy:** Segment dev and prod environments
 - **Greener IT:** Eco-friendly, less power consumption and less hardware

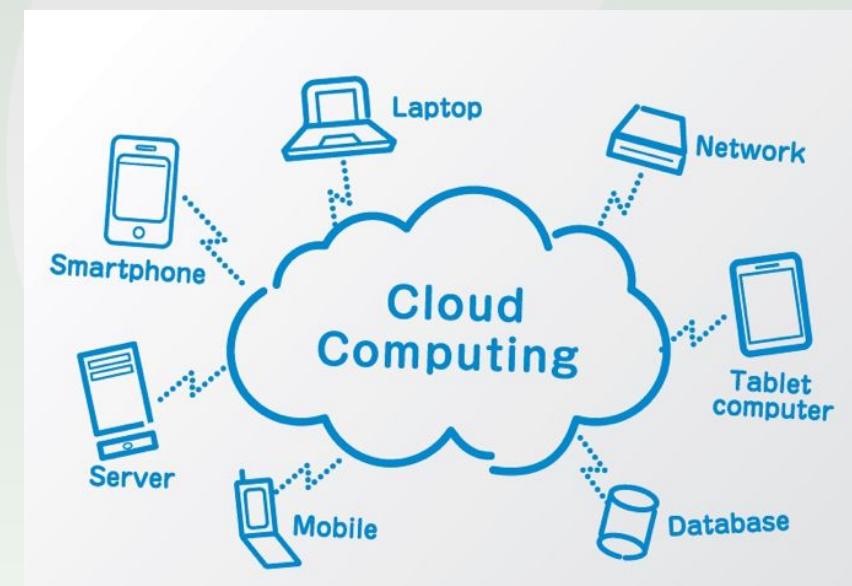
So, those benefits of virtualization and advances in connection speeds, lead to marketing of such computing resources to clients.



Introduction to Cloud Computing

What is Cloud Computing ?

- Cloud computing is the **on-demand delivery of compute power, database, storage, applications, and other IT resources** through a cloud services platform via the internet.
- The Cloud term refers to **software and services running on the internet, not locally on your computer.**
- So you can Store and access data and programs over the internet rather than the hard drive of your computer.
- **Application runs on someone else's computer.**





Introduction to Cloud Computing

How does Cloud work?

- **Information and data are stored on physical or virtual servers** that a **cloud computing service provider** such as Amazon and its AWS company retain and monitor.
- As a user of personal or business cloud computing, you use an internet connection to access the stored information on the cloud.
- You **demand and use the services provided by cloud provider**.
- You **pay for the services you use**.

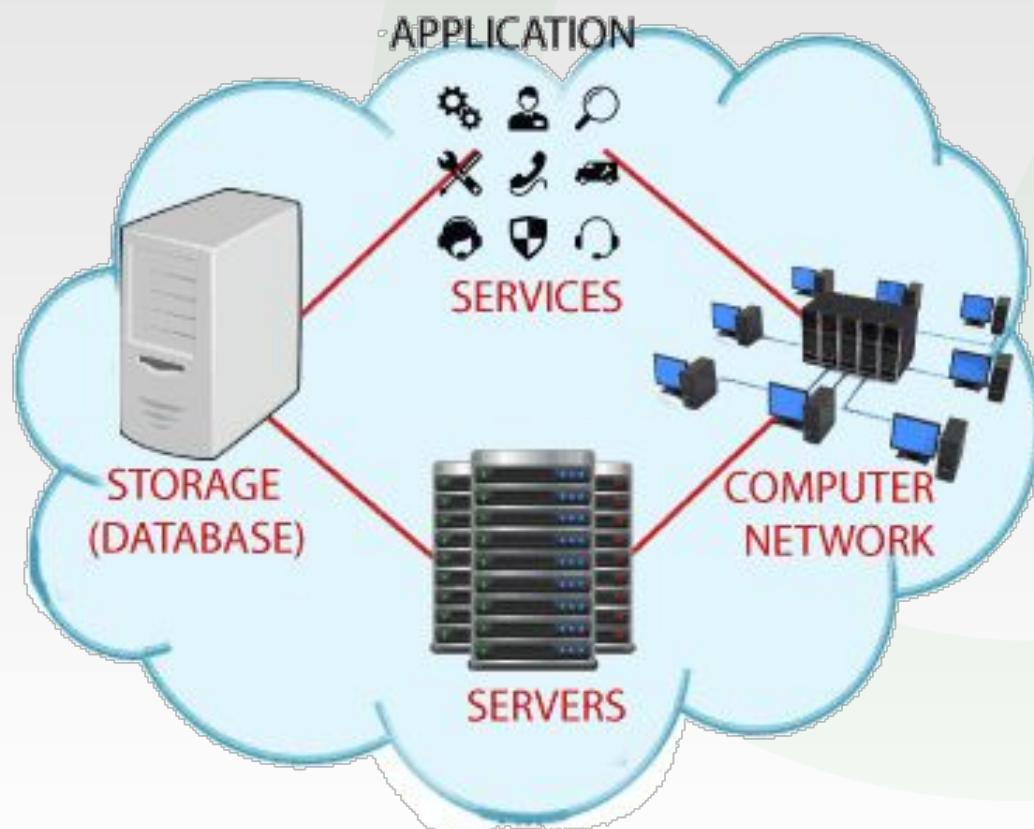


Introduction to Cloud Computing

Before
Cloud Computing



After
Cloud Computing





Introduction to Cloud Computing

Why Cloud Computing ?

Cloud Computing evolved the ways we use a computer.

- We used **5.25" disks, 3.5" diskettes, flash disks, and now storage is the cloud.**
- From companies to private users, everybody relies on the cloud directly or indirectly most of the time in their daily lives.
- Nowadays, cloud-based activities are rising the Internet's capacity more than ever before. So, nearly everything in the digital world runs on cloud computing.
- **A service/app you are using most probably is running on the cloud.**



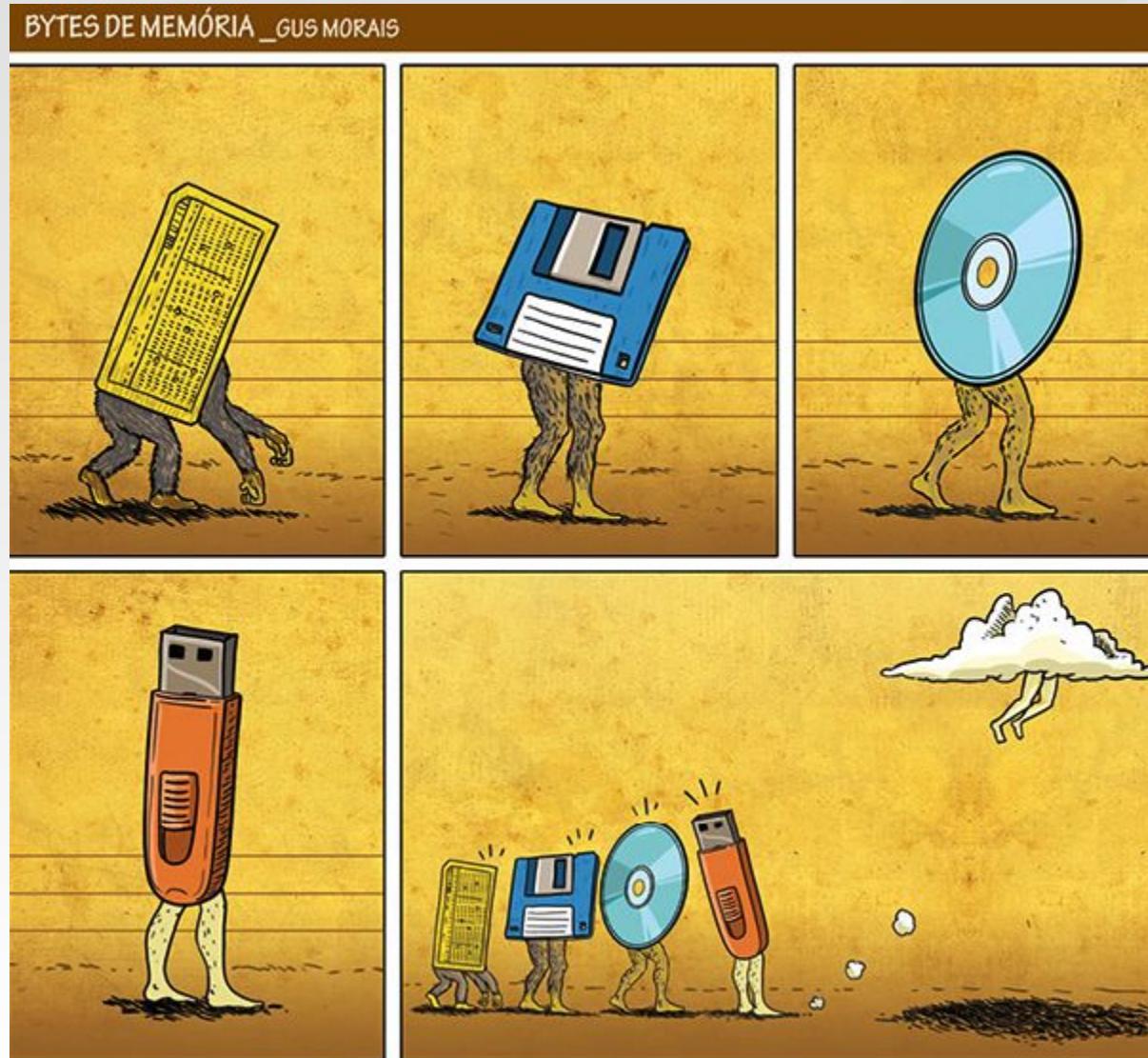
Introduction to Cloud Computing

Why Cloud Computing ?

- It increases the value of the work and promises to reduce costs and helps users focus on their business and work rather than IT obstacles.
- It offers **flexibility, data recovery, little or no maintenance, easy access and a higher level of security.**



Introduction to Cloud Computing





Advantages of The Cloud Technology

- There are various benefits of cloud computing technology. The most important ones are given below.



Cost Efficiency VOLUMES



Elasticity & Flexibility VOLUMES



Reliability VOLUMES



Increased Security VOLUMES



Manageability VOLUMES



Availability VOLUMES



Centralization VOLUMES



Auto-Updating VOLUMES



No Maintenance VOLUMES



Advantages of The Cloud Technology



Cost Efficiency

OLUMES

- One of the most important benefits of Cloud Computing is its economy.
- Cloud computing helps to reduce a significant amount of expenditure on both capital & operational manner.
- Trade capital expense for variable expense. You **do not need to invest in expensive hardware, storage devices, and software, and only pay for the services you use.** This also saves the infrastructure costs and the money needed to manage the network.
- It provides the companies with the lowest possible level of operation with zero data capacity and software requirements, the business can save significant capital costs.



Introduction to Cloud Computing

Advantages of The Cloud Technology



- Cloud computing helps you to **reduce your resource demands and increase them according to your needs.**
- For example, you can increase your resources if you have heavy traffic on your site and vice versa.
- Cloud computing gives you the flexibility to **work anywhere you want, and all you need is an internet connection whenever you want.**



Advantages of The Cloud Technology



Reliability

ED VOLUMES

- Cloud computing is **very reliable as the stored data is secured and can not be manipulated.**
- **Several copies of the data are being made**, and if the database fails, the data from the other copies can be recovered.
- The company can take advantage of both the vast pool of redundant IT services and the process of failover.



Advantages of The Cloud Technology



Increased Security MES

- Everything you access and save with cloud computing is on the cloud.
- Even if a laptop is lost or damaged, another computer can be used to access the company GUI. And since all of the records are stored on the cloud, there is no question about losing important documents.
- Instead of an organization dividing its efforts among a multitude of IT issues, with security being just one of them, it just leaves security and the rest to a cloud provider.



Advantages of The Cloud Technology



Manageability

- Cloud computing provides improved and streamlined capabilities for **IT management and maintenance by central resource management.**
- Many items are handled by cloud computing. The only thing the user has to do is get an internet connection and a computer.



Advantages of The Cloud Technology



Availability VOLUMES

- By its definition, cloud computing depends on the Internet.
- A high bandwidth is vital for availability.
- **Cloud service providers offer up to 99.99% uptime** to ensure that business operations and executions continue to flow.



Advantages of The Cloud Technology



- All data are stored in one location,
- **Multiple remote locations can be reached from one location.**



Advantages of The Cloud Technology



- Software updates and enhancements can be a painful thing but cloud computing simplifies it for you.
- **The cloud service provider looks after and controls all software maintenance and upgrades.**



Advantages of The Cloud Technology



No Maintenance

- Organizations need to think about managing the entire system while operating a conventional server setup.
- **A cloud computing solution eliminates the need for any maintenance.**
- **Not only does it increases work efficiency, but also reduces costs of operations in the longer run.**



Disadvantages of The Cloud Technology

- The **drawbacks** of cloud computing are as follows:



Internet Dependency



Downtime Volumes



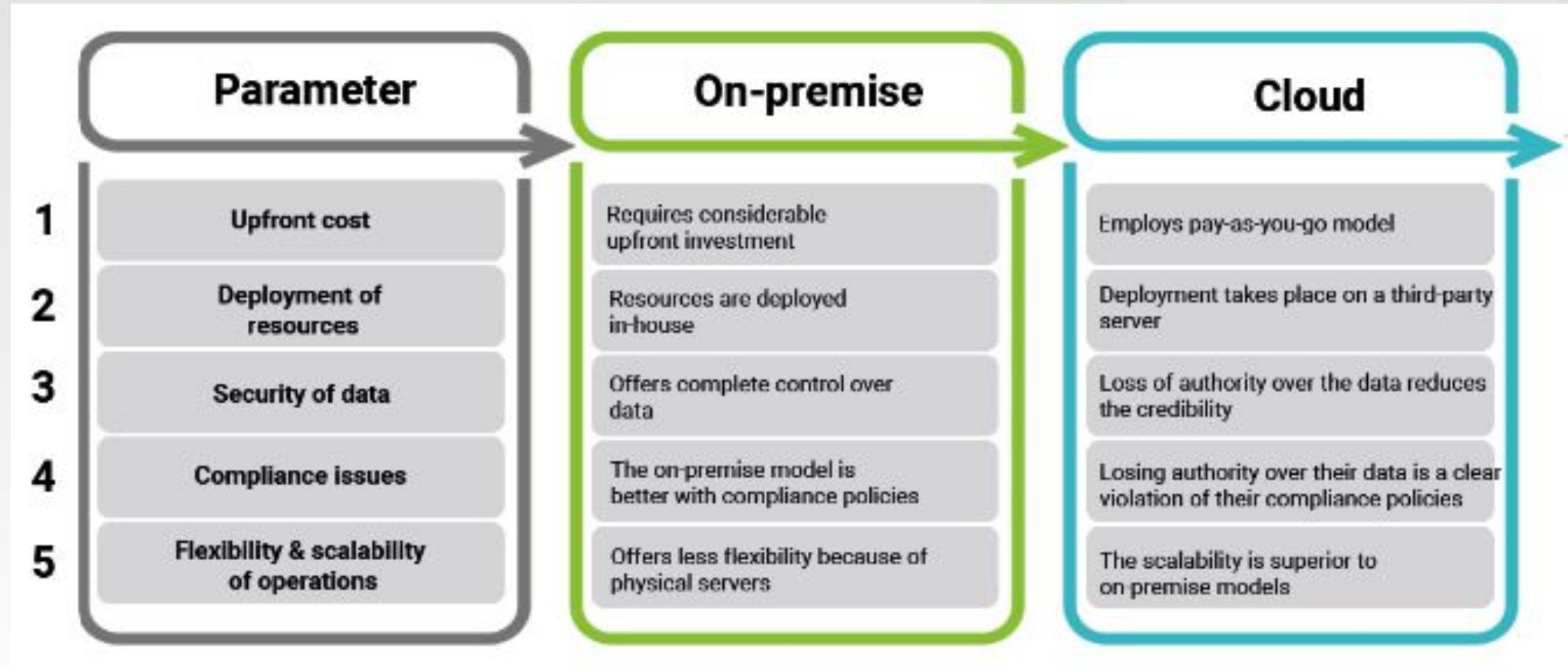
Loss of Control Volumes



Lack of Support Volumes

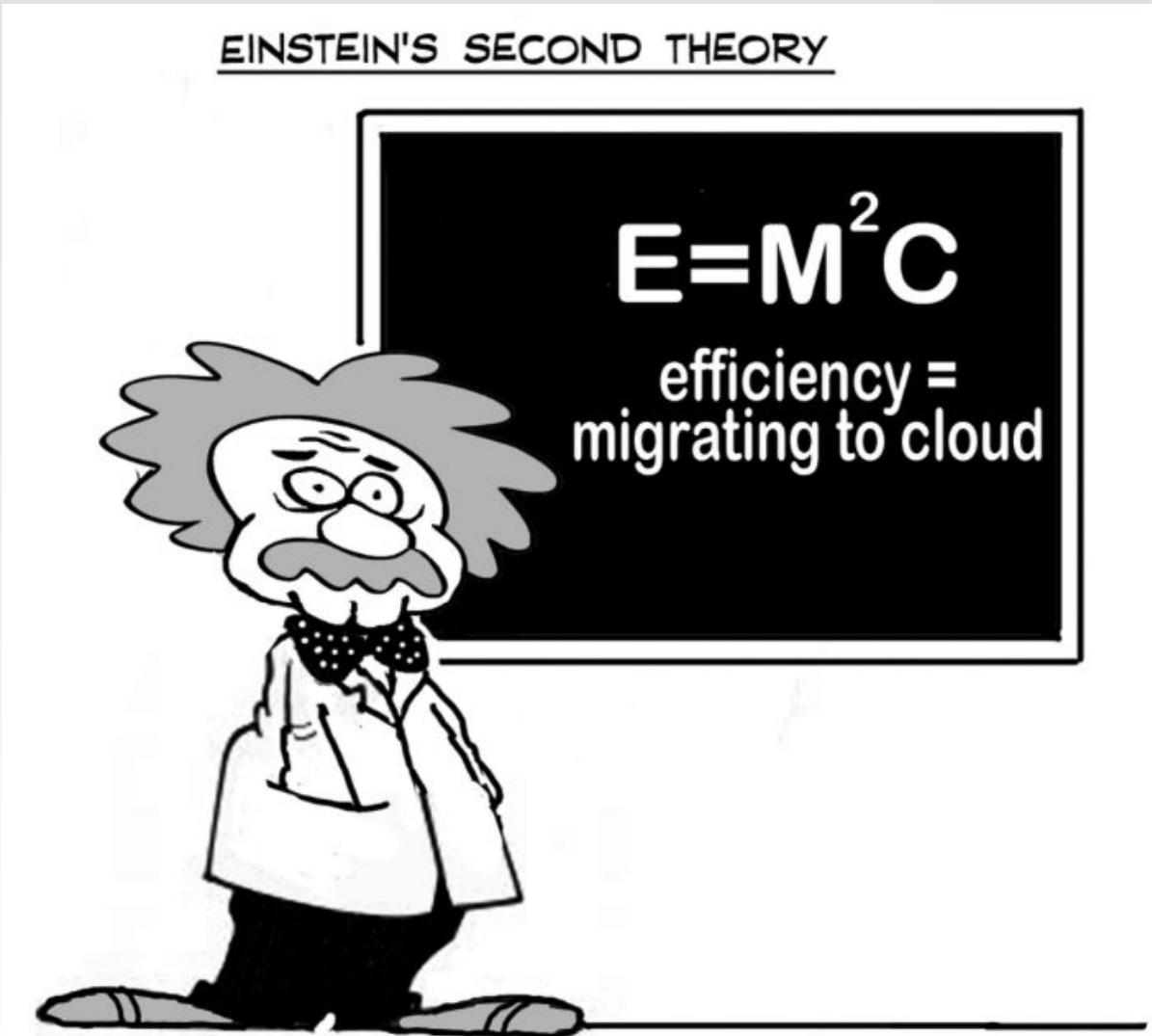


Key Differences Between Cloud and On-Premise





Cloud and On-Premise





History of Cloud Computing

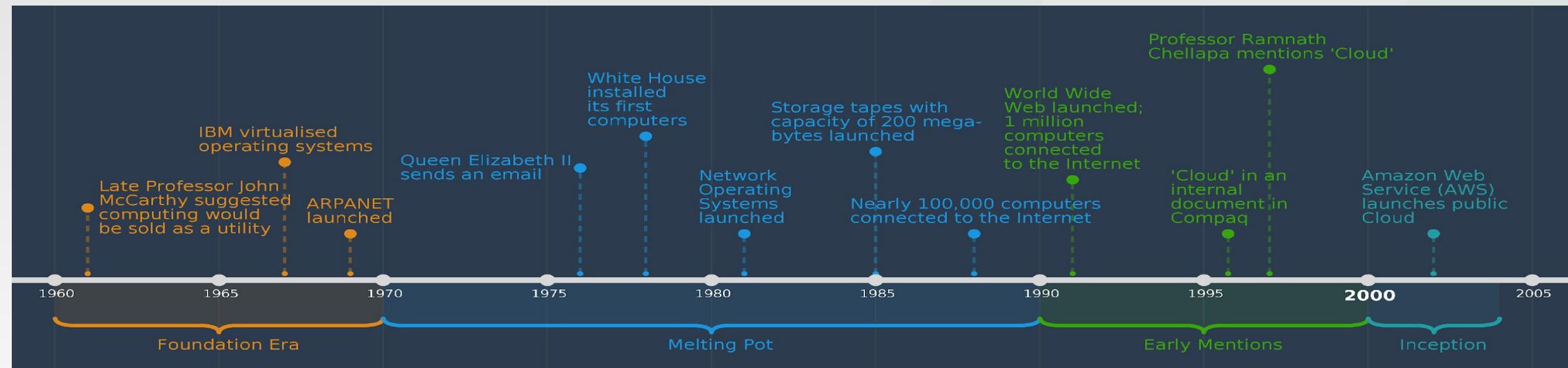


Cloud Computing Timeline

- ✓ **1963:** The Defense Advanced Research Projects Agency funded \$2 million for a project that included developing a technology that allowed 2 or more people to use a computer simultaneously.
- ✓ **1969:** Joseph Carl Robnett Licklider discussed and brought forth the concept of the “Intergalactic Computer Network,” which would connect people and data from anywhere at any time.
- ✓ **1999:** Salesforce was very successful in using cloud computing, which they used to deliver software programs over the internet.
- ✓ **2002:** Amazon used the cloud computing model to provide capacity for their own infrastructure. In 2006, they launched Amazon Web Services — allowing other companies to take advantage.

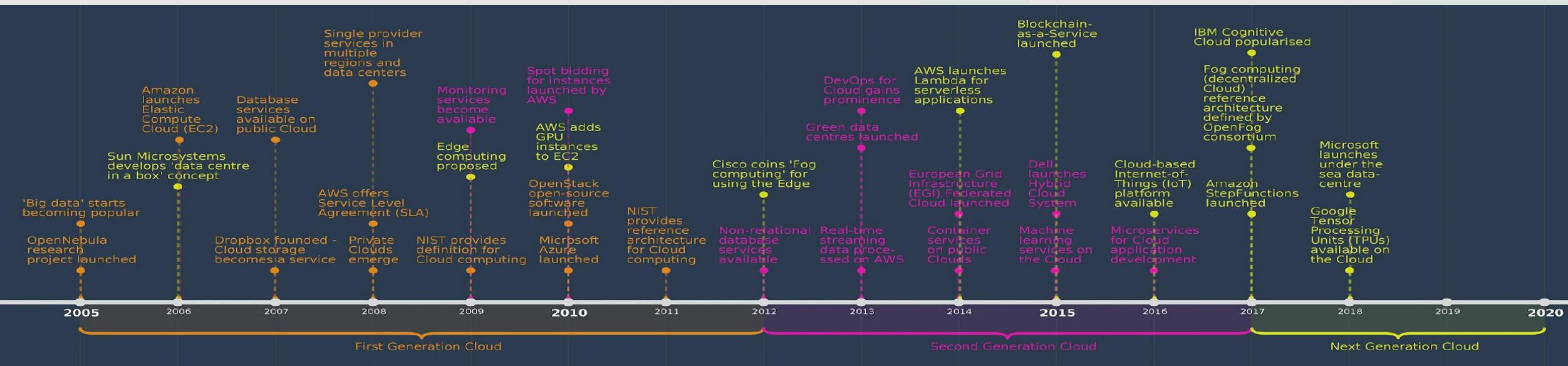


Evolution of the Cloud Computing



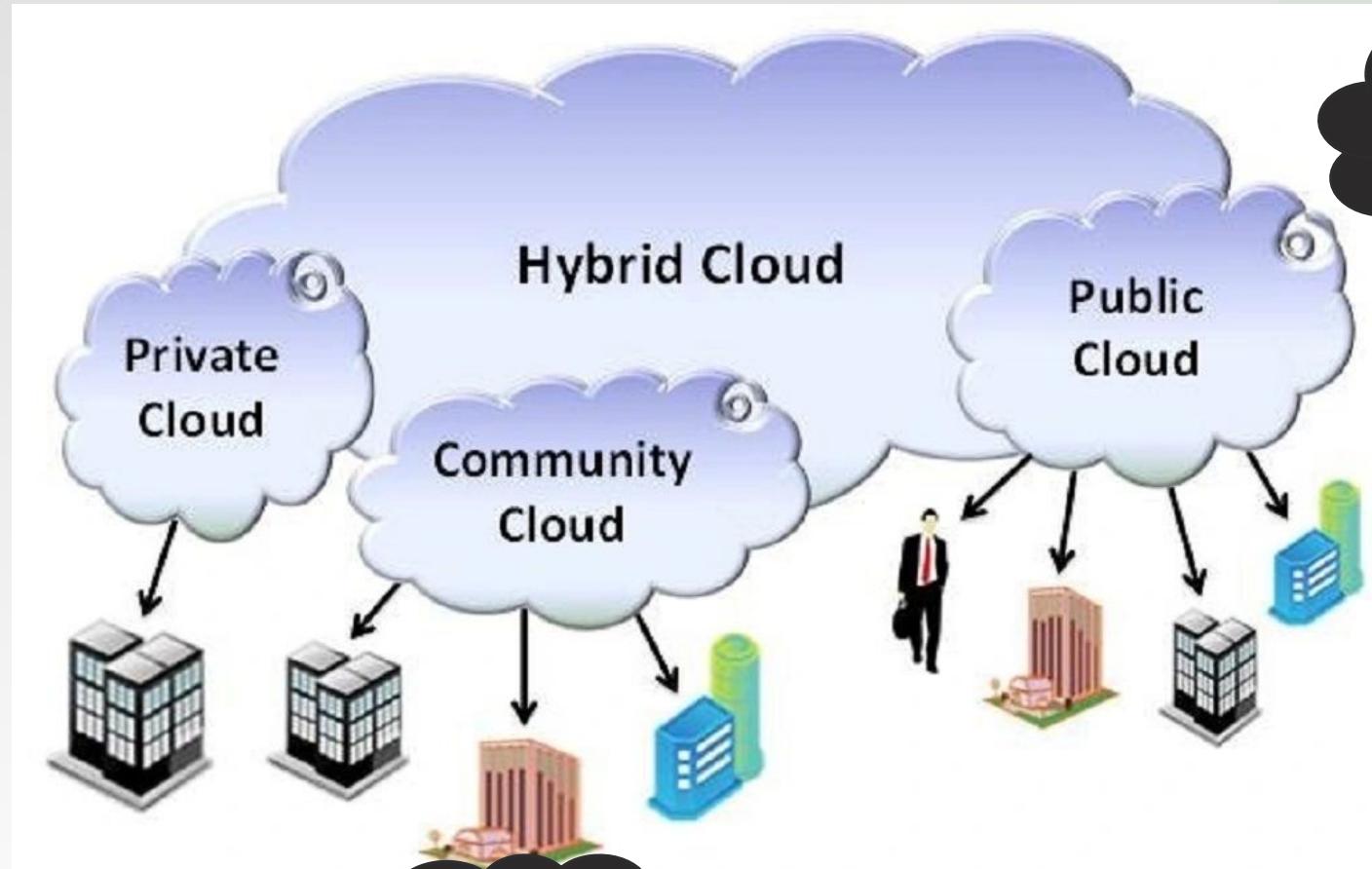


Evolution of the Cloud Computing

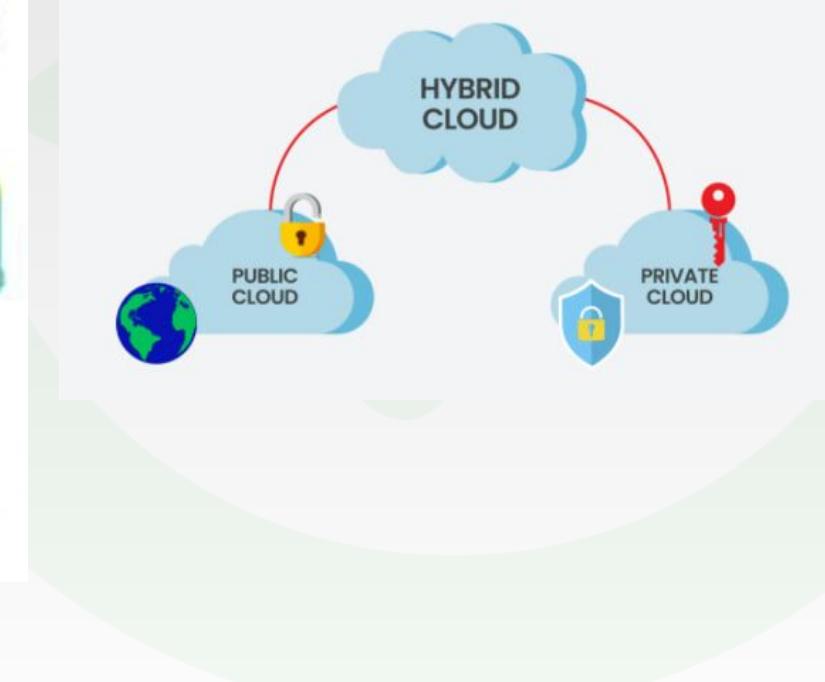




Cloud Computing Deployment Models



IBM, Google,
Amazon,
Microsoft



E-Devlet
Financial
Institutions



Cloud Computing Service Models

Cloud Services Control Comparison

On premises	IaaS	PaaS	SaaS
Applications	Applications	Applications	Applications
Data	Data	Data	Data
Runtime	Runtime	Runtime	Runtime
Middleware	Middleware	Middleware	Middleware
O/S	O/S	O/S	O/S
Virtualization	Virtualization	Virtualization	Virtualization
Servers	Servers	Servers	Servers
Storage	Storage	Storage	Storage
Networking	Networking	Networking	Networking

You Manage

Provider Manages



Cloud Computing Service Models

On-Premises

Made at Home

IaaS

Buy & bake

PaaS

Cake delivery

SaaS

Dine out

Dinning table	Dinning table	Dinning table	Dinning table
Water	Water	Water	Water
Electricity	Electricity	Electricity	Electricity
Oven	Oven	Oven	Oven
Cake Pan	Cake Pan	Cake Pan	Cake Pan
Flour	Flour	Flour	Flour
Sugar	Sugar	Sugar	Sugar
Butter	Butter	Butter	Butter
Eggs	Eggs	Eggs	Eggs



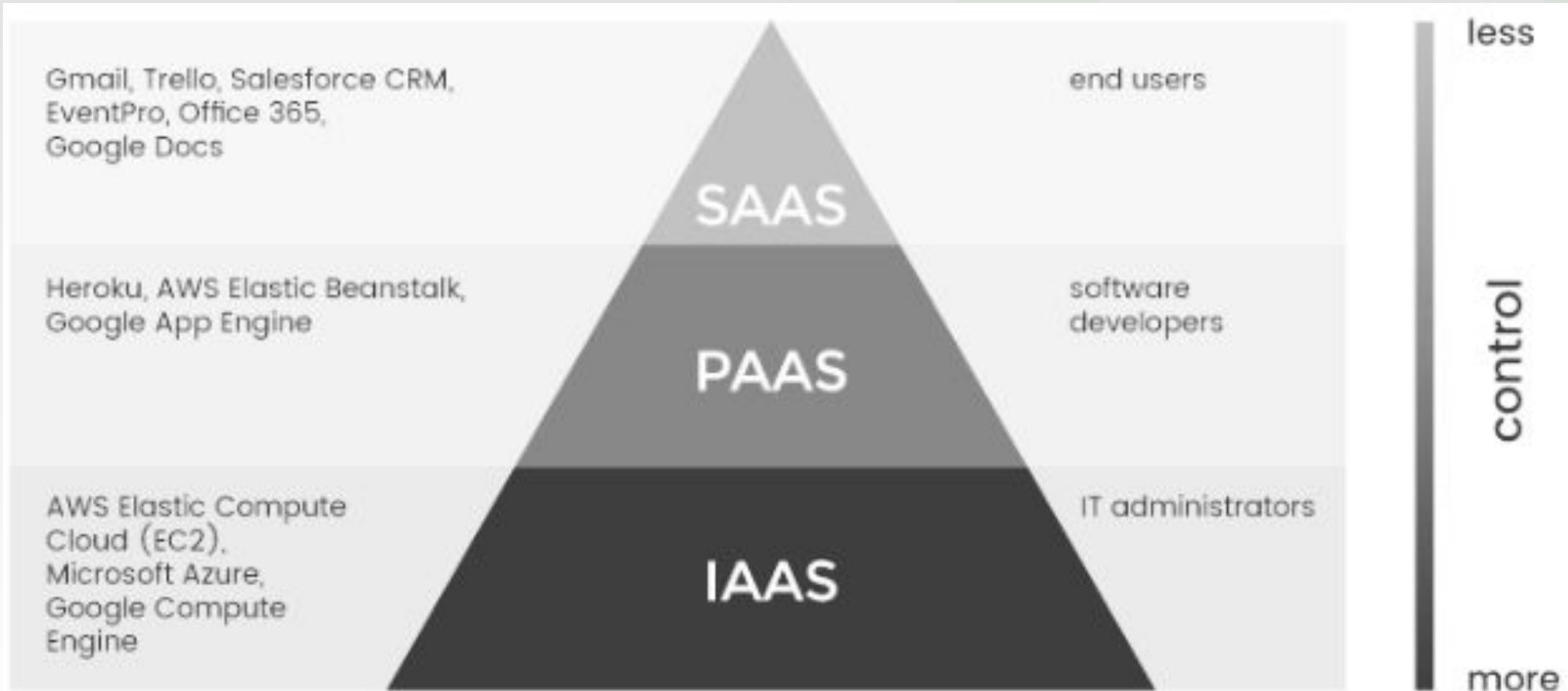
Managed by you



Managed by Vendor



Cloud Computing Service Models





Cloud Computing Service Models

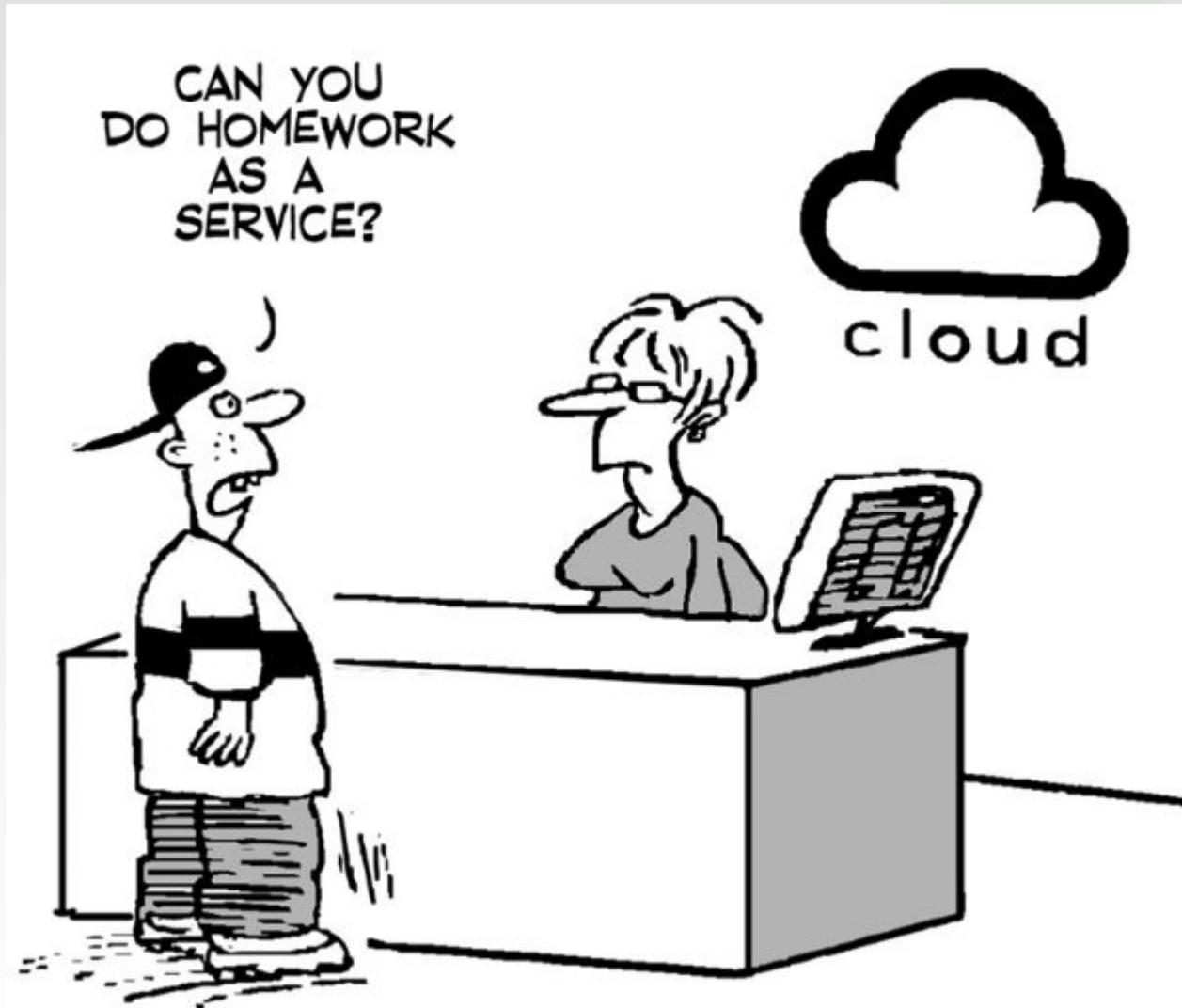




Table of Contents

- What is AWS?
- History of AWS
- Features of AWS
- AWS Global Infrastructure
- AWS Free Tier



Introduction to AWS

What is AWS ?

- AWS stands for Amazon Web Services that offers various **IT services on demand**, using **distributed IT infrastructure** and offers **flexible, reliable, scalable, and cost-effective** cloud computing solutions.
- Amazon Web Services (AWS) is the world's most comprehensive and broadly adopted cloud platform, offering **more than 200** fully-featured services from data centers globally.
- Netflix is using AWS

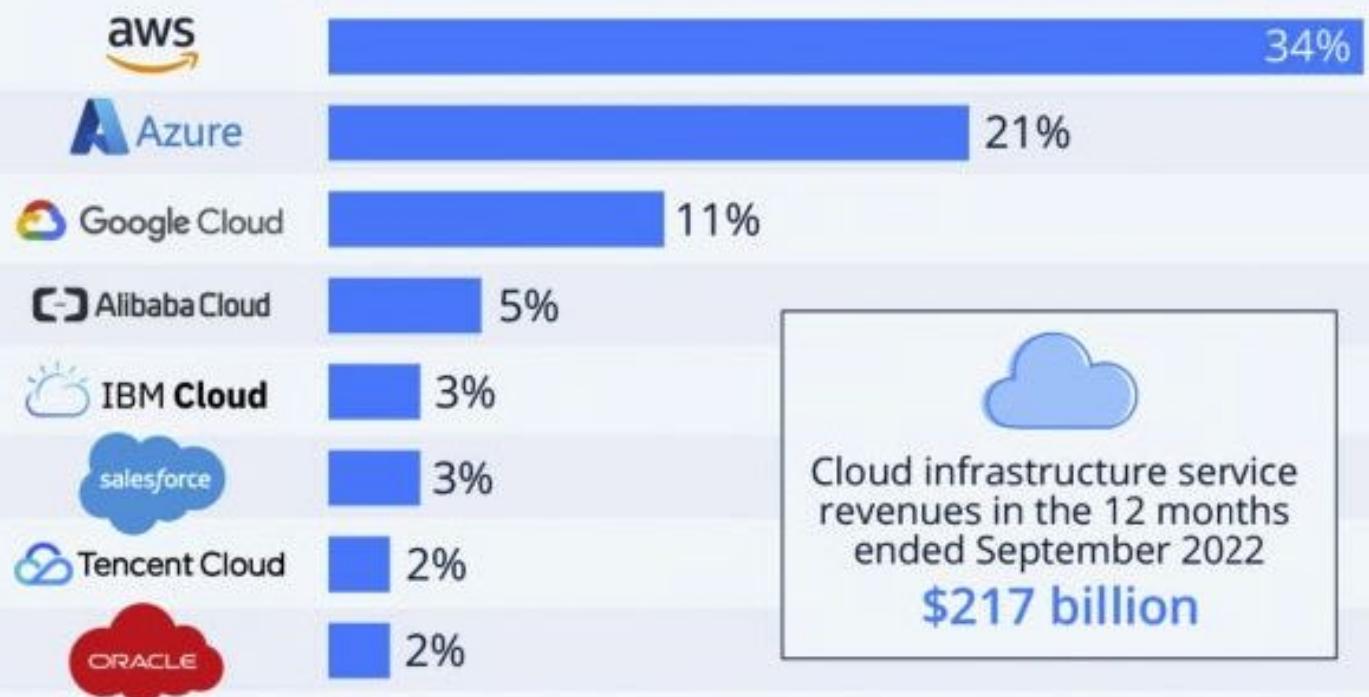




Introduction to AWS

Amazon, Microsoft & Google Dominate Cloud Market

Worldwide market share of leading cloud infrastructure service providers in Q3 2022*



Cloud infrastructure service revenues in the 12 months ended September 2022
\$217 billion

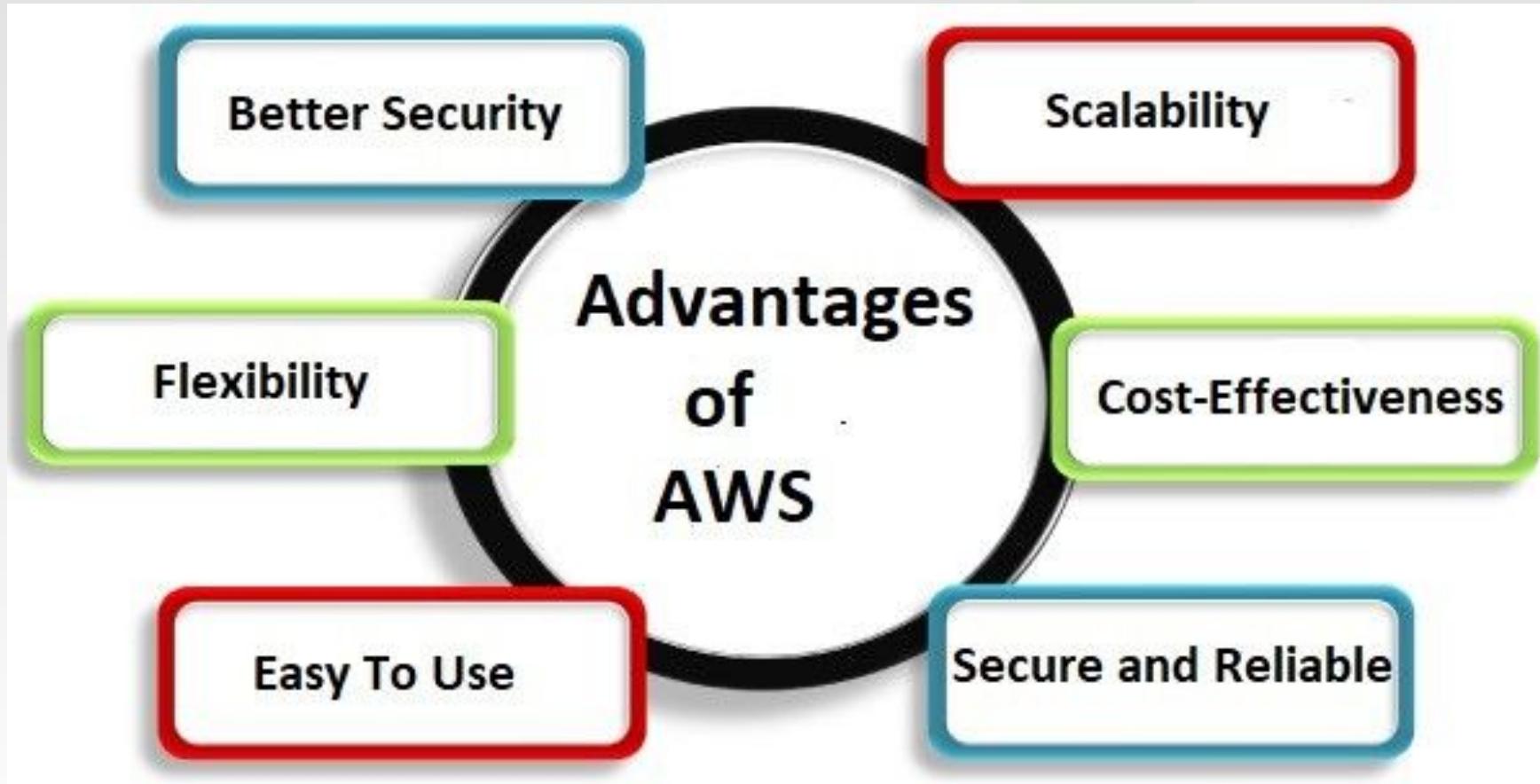


History of AWS



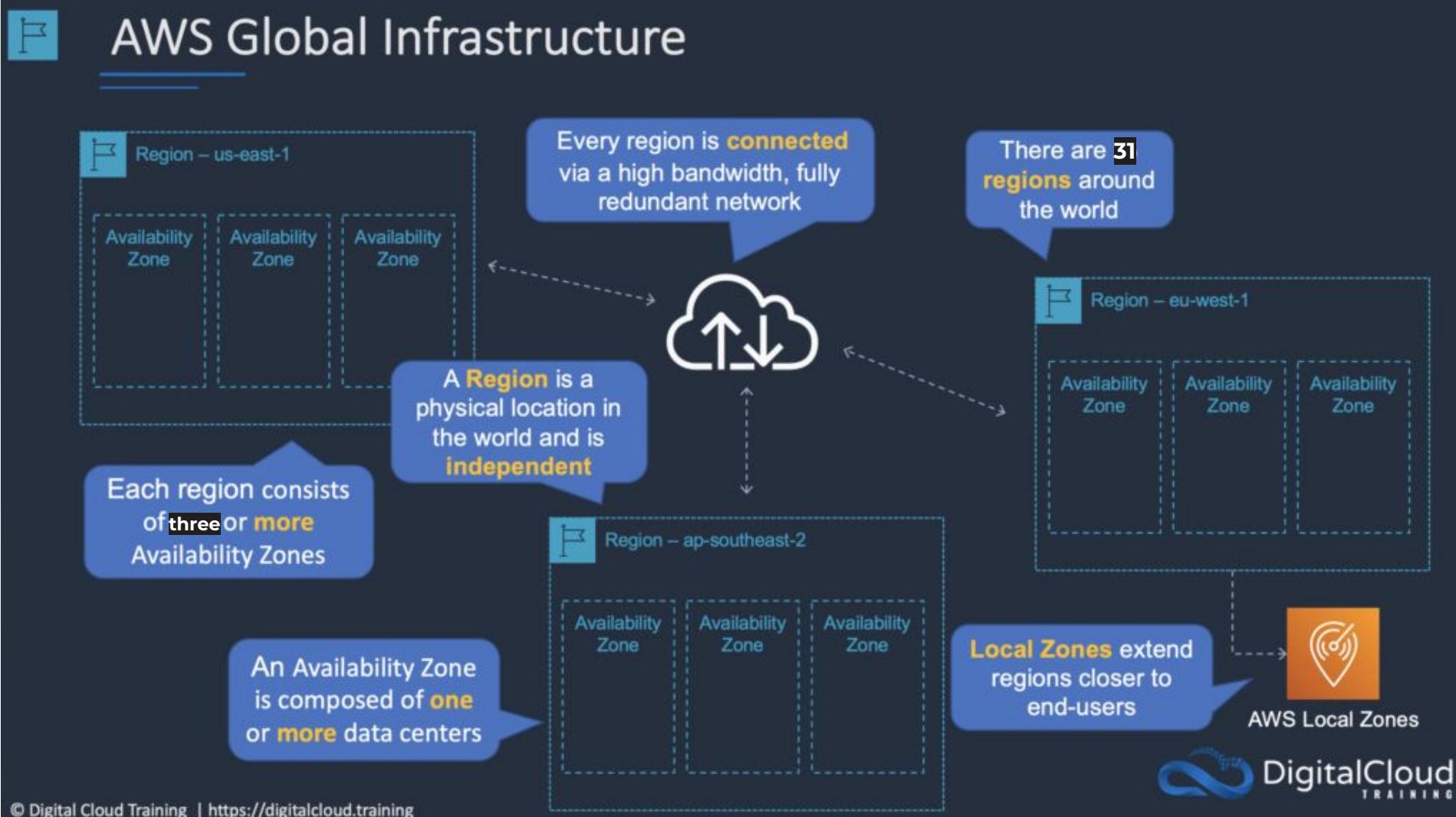


Features of AWS





Global Infrastructure of AWS





Introduction to AWS

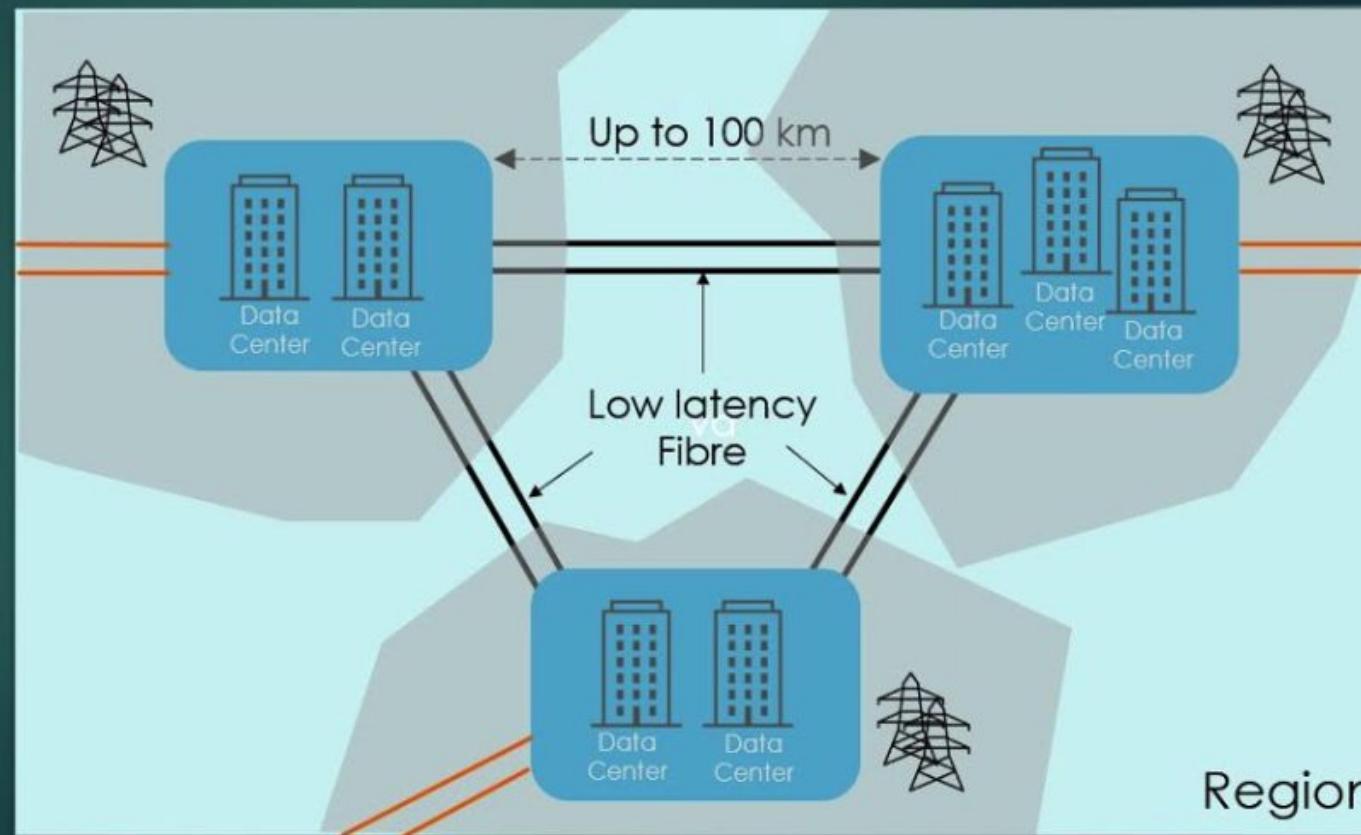
1 Region = Multiple AZs (Min 3)

1 AZ = Cluster of Data centres

Different floodplains
(in most cases)

Redundant Power Supply

Redundant Network Connectivity





Introduction to AWS

AWS Global Infrastructure: Regions





Introduction to AWS

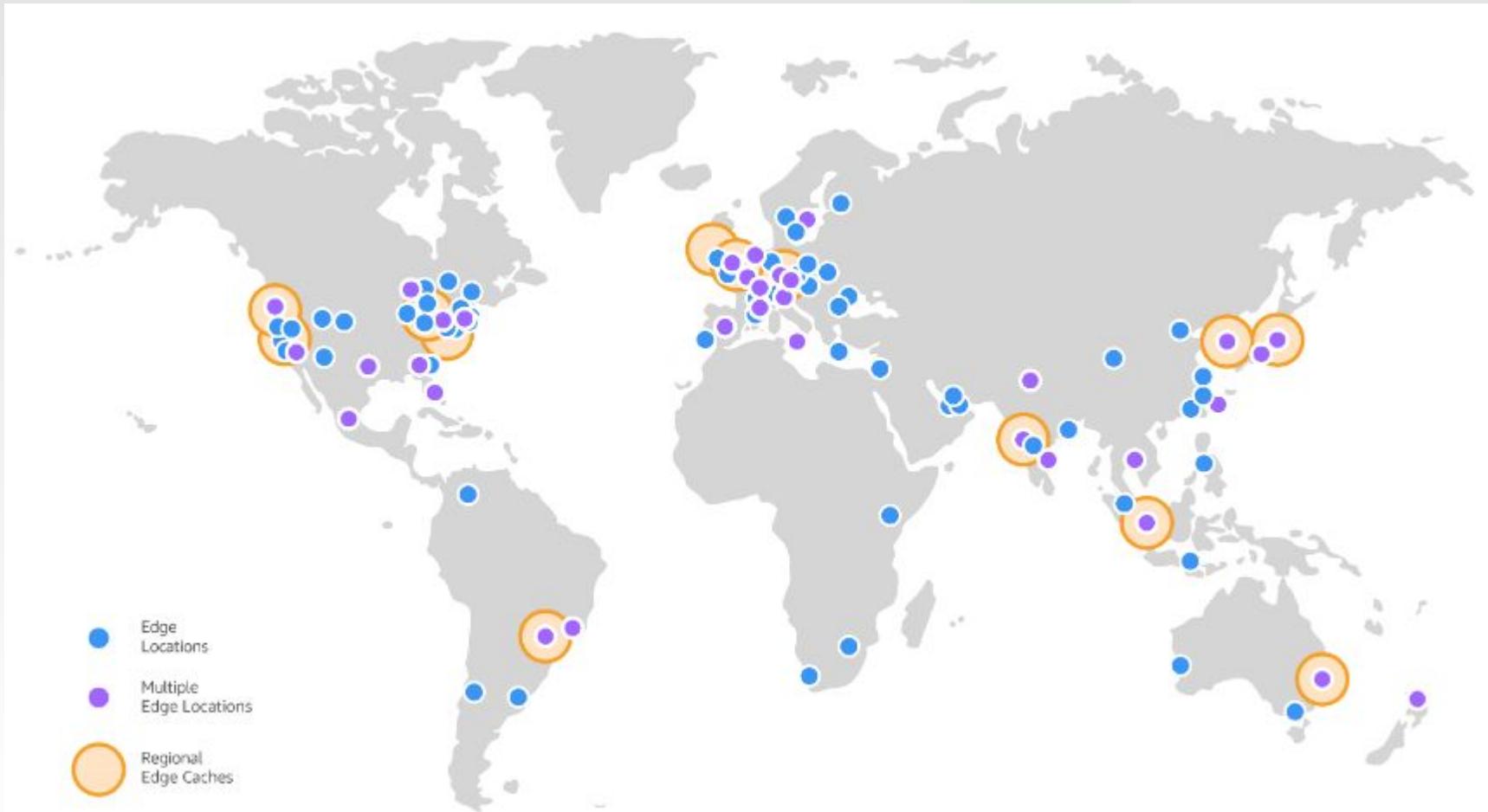
AWS Global Infrastructure: Data Centers





Introduction to AWS

AWS Edge Locations

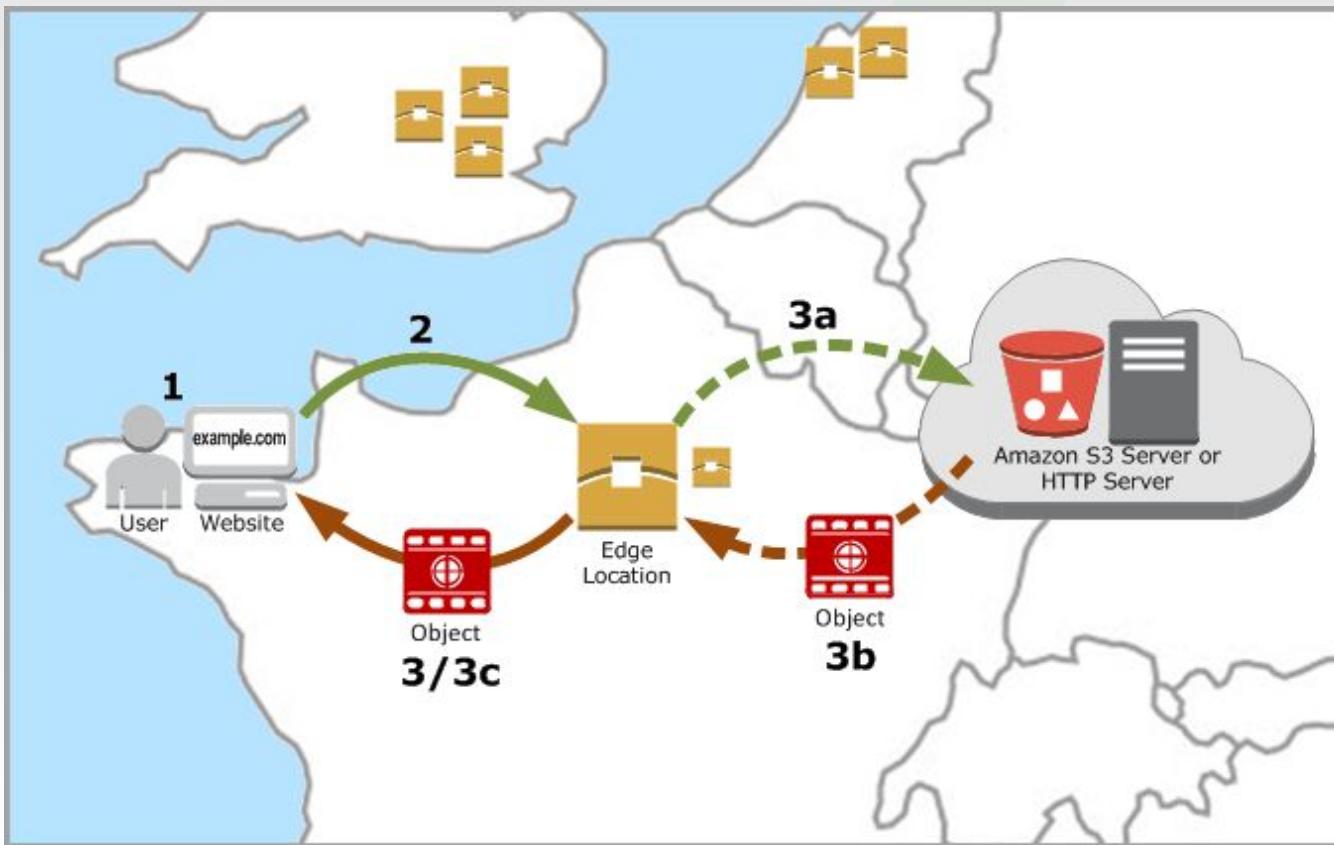




Introduction to AWS

AWS Edge Locations

- provides caching and low latency connections

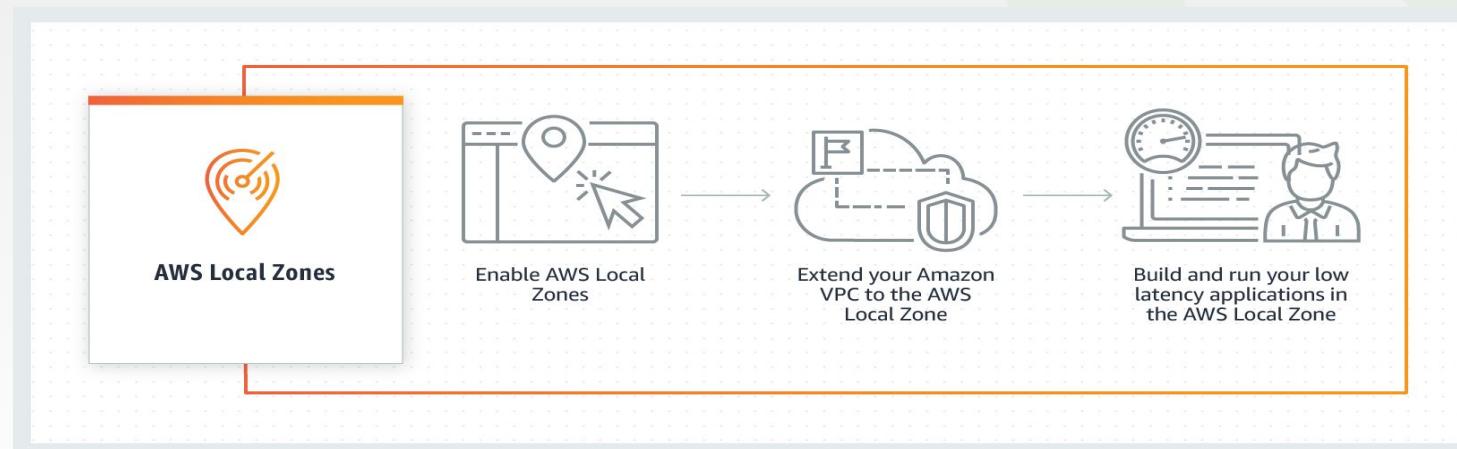




Introduction to AWS

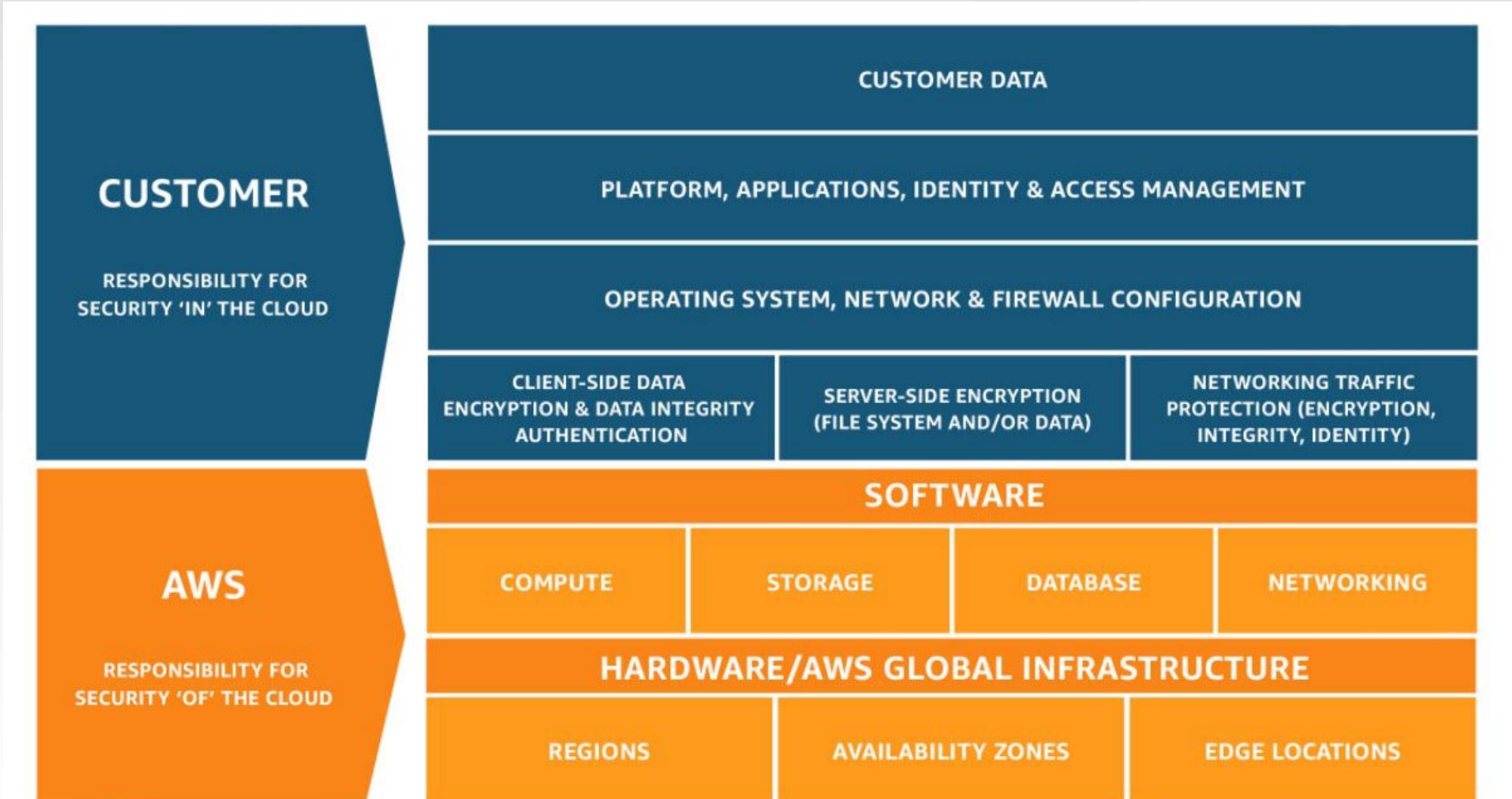
AWS Local Zones

- AWS Local Zones, you can easily run applications that need single-digit millisecond latency closer to end-users in a specific geography.
- AWS Local Zones are ideal for use cases such as media & entertainment content creation, real-time gaming, live video streaming, and machine learning inference.





AWS Shared Responsibility Model





AWS Free Tier



Always free

These free tier offers do not expire and are available to all AWS customers



12 months free

Enjoy these offers for 12-months following your initial sign-up date to AWS



Trials

Short-term free trial offers are available through many different software solutions

- 🕒 Services with a **12-month Free Tier** allow customers to use the product for free up to specified limits for one year from the date the account was created.
- 🕒 Services with an **Always Free** offer allow customers to use the product for free up to specified limits as long as they are an AWS customer.
- 🕒 Services with a **short term trial** are free to use for a specified period of time or up to a one-time limit depending on the service selected.



AWS Free Tier

The AWS Free Tier provides customers the ability to explore and try out AWS services free of charge up to specified limits for each service. You can explore more than **100 products** and start building on AWS using the free tier.

The screenshot shows the AWS Free Tier landing page. At the top is a dark navigation bar with the AWS logo, followed by links for re:Invent, Products, Solutions, Pricing, Documentation, Learn, Partner Network, AWS Marketplace, Customer Enablement, Events, Explore More, and a search icon. Below the navigation is a secondary navigation bar with links for AWS Free Tier, Overview, FAQs, and Terms and Conditions. The main content area features a large, bold title "AWS Free Tier" and a subtext "Gain free, hands-on experience with the AWS platform, products, and services". A prominent yellow button at the bottom is labeled "Create a Free Account". The background of the page has a subtle digital theme with binary code patterns.



AWS Free Tier

AWS FREE TIER Billing Policy

- To avoid charges while on the Free Tier, you must keep your usage below the Free Tier limits.
 - You **are charged for any usage that exceeds the limits.**
 - To help you stay within the limits, you can track your Free Tier usage and *set a billing alarm to notify* you if you start incurring charges.
 - If your application use exceeds the free tier limits, you simply pay standard, pay-as-you-go service rates.
 - **AWS Free Tier is applied to your monthly usage. It will expire on the 1st day of each month and does not accumulate.**
- You can see current and past usage activity by service and region by logging into your account and going to the **Billing & Cost Management** Dashboard.



Free Tier Limits:

COMPUTE	STORAGE	DATABASE
Free Tier 12 MONTHS FREE Amazon EC2 750 Hours per month Resizable compute capacity in the Cloud. <small>750 hours per month of Linux, RHEL, or SLES</small> ▼	Free Tier 12 MONTHS FREE Amazon S3 5 GB of standard storage Secure, durable, and scalable object storage infrastructure. <small>5 GB of Standard Storage</small> ▼	Free Tier 12 MONTHS FREE Amazon RDS 750 Hours per month of database usage (applicable DB engines) Managed Relational Database Service for MySQL, PostgreSQL, MariaDB, or SQL Server. ▼
DATABASE	MACHINE LEARNING	COMPUTE
Free Tier ALWAYS FREE Amazon DynamoDB 25 GB of storage Fast and flexible NoSQL database with seamless scalability. <small>25 GB of Storage</small> ▼	Free Tier FREE TRIAL Amazon SageMaker 2 Months free trial Machine learning for every data scientist and developer. <small>250 hours per month of ml.t3.medium on</small> ▼	Free Tier ALWAYS FREE AWS Lambda 1 Million free requests per month Compute service that runs your code in response to events and automatically manages the compute resources. ▼



AWS Certification

Professional

Two years of comprehensive experience designing, operating, and troubleshooting solutions using the AWS Cloud



Associate

One year of experience solving problems and implementing solutions using the AWS Cloud



Architect

Operations

Developer

Foundational

Six months of fundamental AWS Cloud and industry knowledge

Cloud Practitioner



Specialty

Technical AWS Cloud experience in the Specialty domain as specified in the exam guide





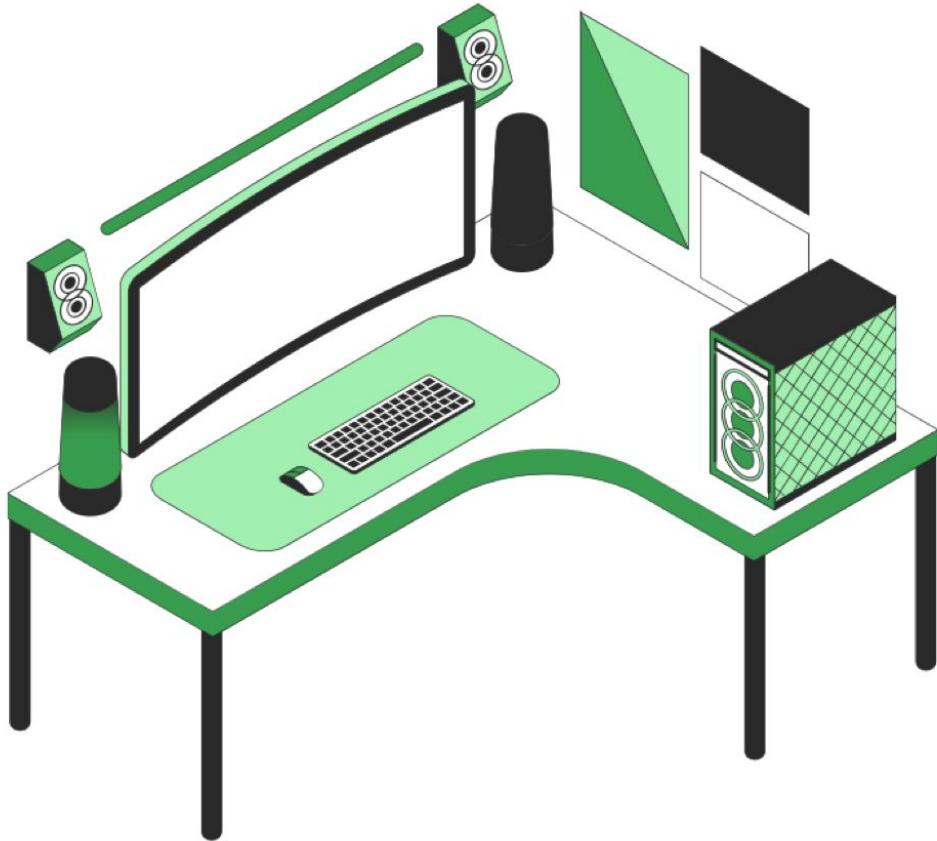
AWS Billing Alarm





6 Advantages of the Cloud

- **Trade fixed expense for variable expense** – Instead of having to invest heavily in data centers and servers before you know how you're going to use them, you can pay only when you consume computing resources, and pay only for how much you consume.
- **Benefit from massive economies of scale** – By using cloud computing, you can achieve a lower variable cost than you can get on your own. Because usage from hundreds of thousands of customers is aggregated in the cloud, providers such as AWS can achieve higher economies of scale, which translates into lower pay-as-you-go prices.
- **Stop guessing capacity** – Eliminate guessing on your infrastructure capacity needs. When you make a capacity decision prior to deploying an application, you often end up either sitting on expensive idle resources or dealing with limited capacity. With cloud computing, these problems go away. You can access as much or as little capacity as you need, and scale up and down as required with only a few minutes' notice.
- **Increase speed and agility** – In a cloud computing environment, new IT resources are only a click away, which means that you reduce the time to make those resources available to your developers from weeks to just minutes. This results in a dramatic increase in agility for the organization, since the cost and time it takes to experiment and develop is significantly lower.
- **Stop spending money running and maintaining data centers** – Focus on projects that differentiate your business, not the infrastructure. Cloud computing lets you focus on your own customers, rather than on the heavy lifting of racking, stacking, and powering servers.
- **Go global in minutes** – Easily deploy your application in multiple regions around the world with just a few clicks. This means you can provide lower latency and a better experience for your customers at minimal cost.



Do you
have any
questions?

Send it to us! We hope you learned
something new.