Cloud Computing Basics

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- Virtualization

- Containerization Technology

- Software Development Cycle

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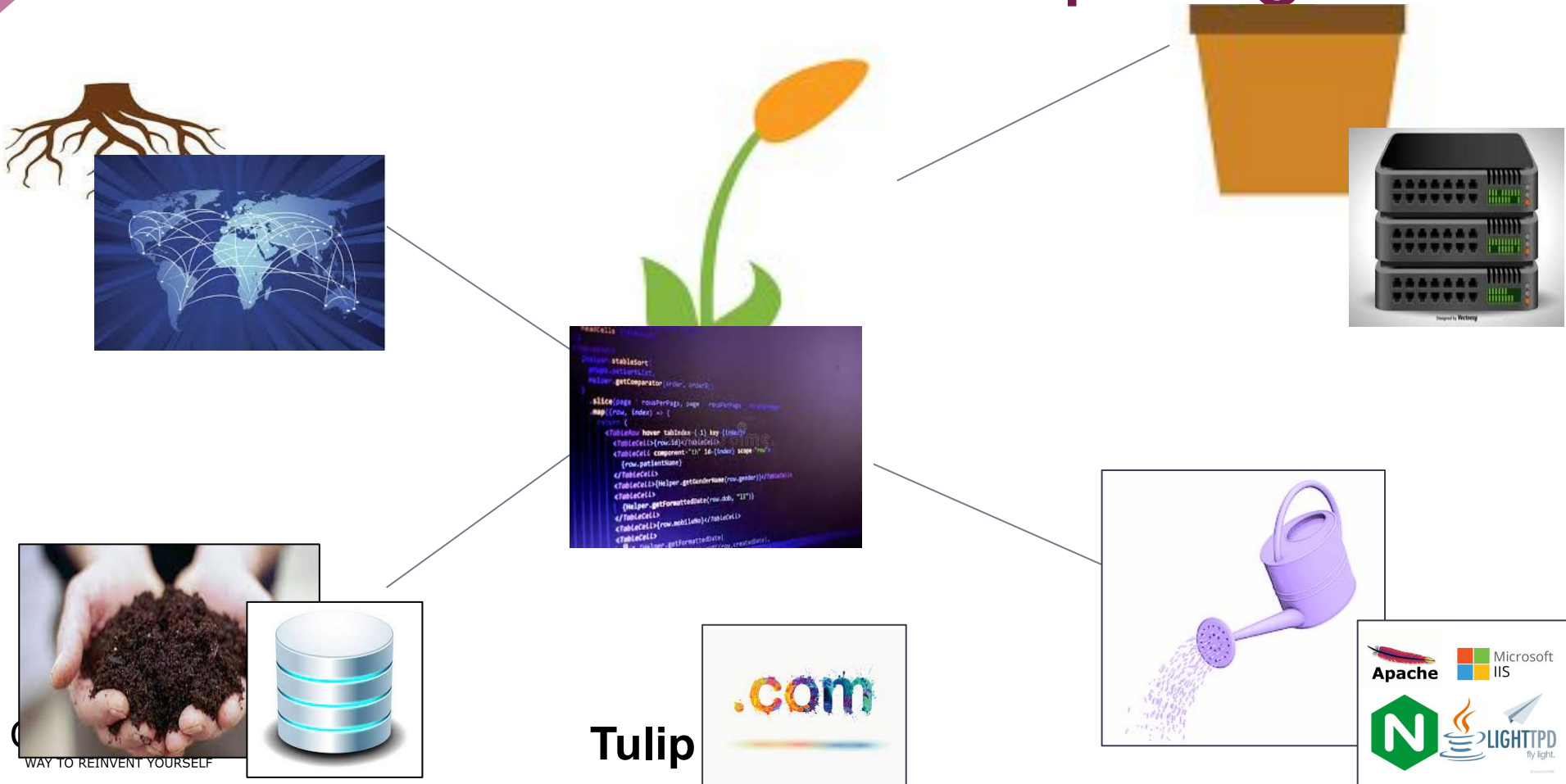
▶ Service Model

▶ Deployment Models

▶ Conclusions

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1 Introduction to Cloud Computing

Introduction to Cloud Computing

Tulip

Introduction to Cloud Computing

Tulip

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Introduction to Cloud Computing

www.clarusway.com
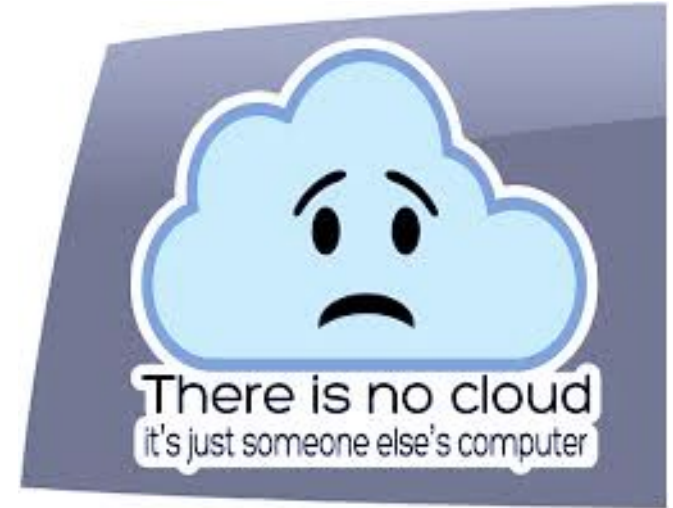
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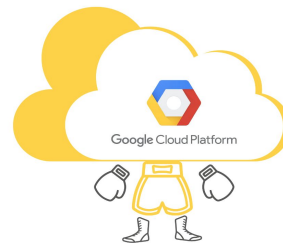
Introduction to Cloud Computing

What is Cloud Computing?

- 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

Cloud Computing = Application running on someone else's computer

Introduction to Cloud Computing

Evolution of the Cloud Computing

• In 2002, Amazon Web Services (AWS) launched its public cloud,

Introduction to Cloud Computing
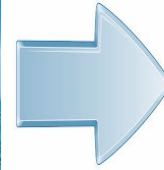
Popular Cloud Computing App.

- Cloud usage is now spreading rapidly around the world.

- Examples of companies using cloud computing :

  - Google Drive,

  - Netflix,

  - Apple iCloud,

  - Dropbox,

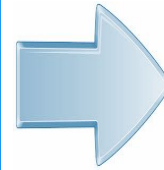 - Microsoft Office Online.

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What is Cloud Computing?

Cloud Computing vs. Cloud Storage

Cloud Storage

Cloud Computing

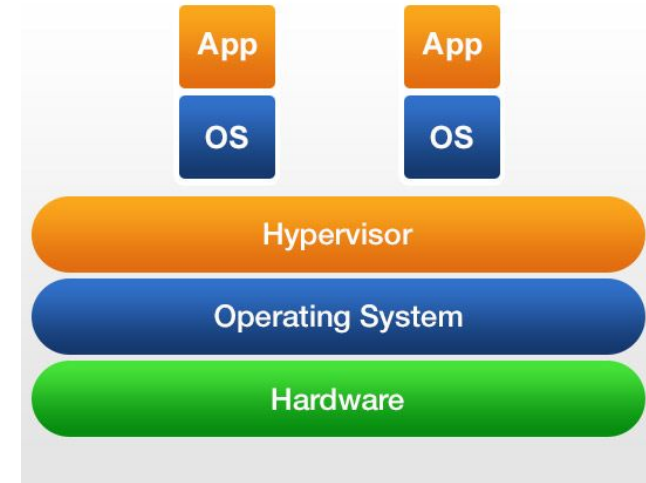Cloud

Why Cloud Computing?

Why Cloud Computing?

Zeitgeist (The spirit of the time)

Why Cloud Computing: New Concepts

- Virtualization

- Containerization Technology

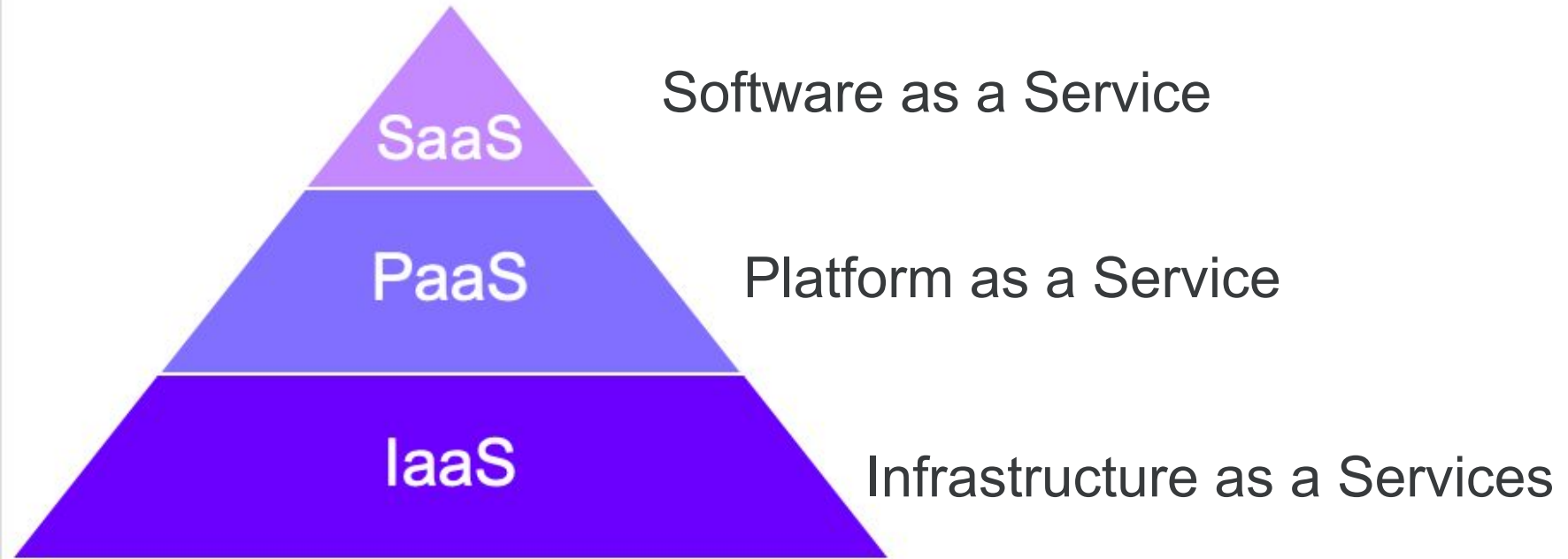- Software Development Cycle

- Serverless

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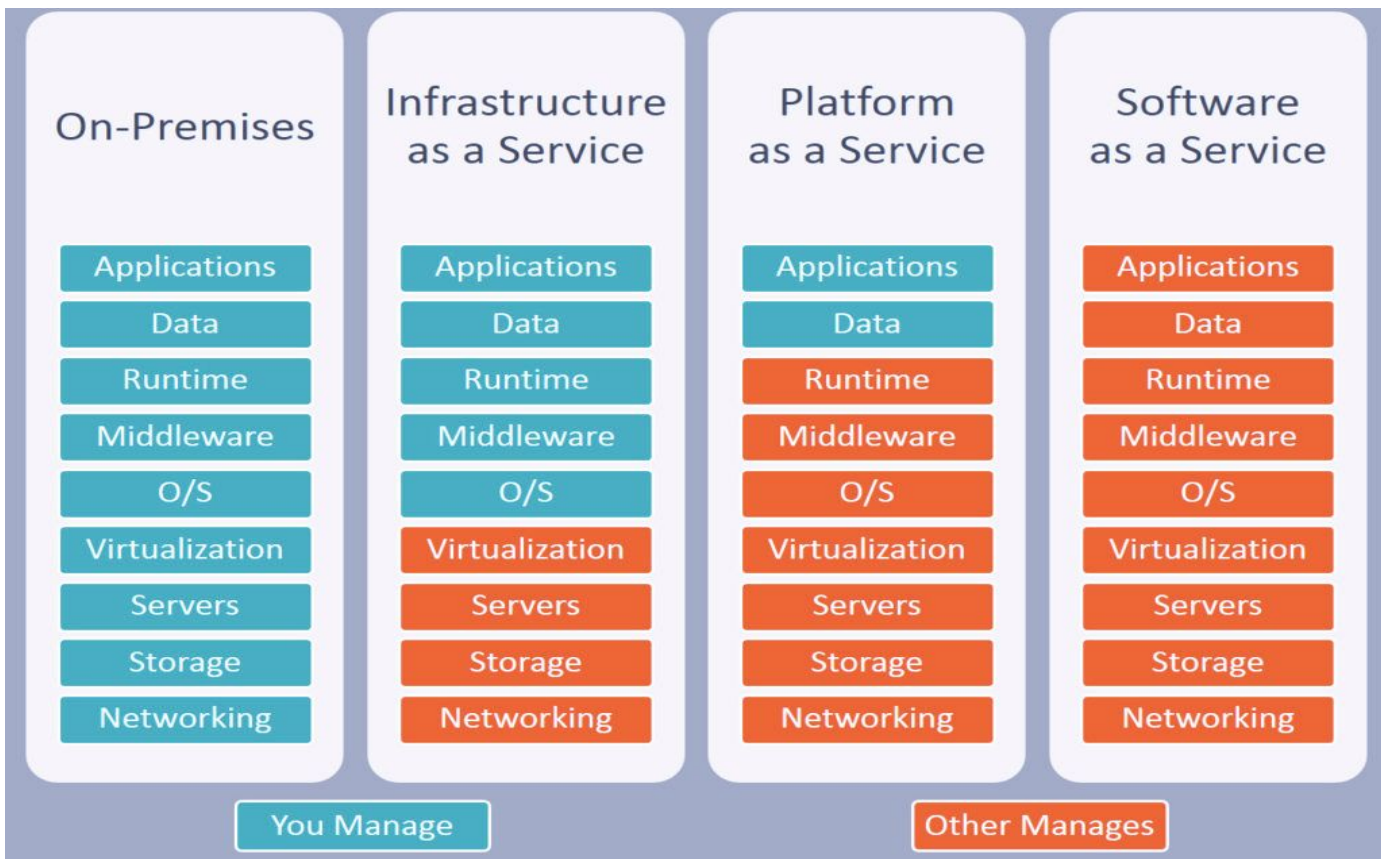WAY TO REINVENT YOURSELF

6 Service Models

Service Models

Software as a Service

Platform as a Service

Infrastructure as a Services

SaaS

PaaS

IaaS

Service Models

Cloud Service Models

On-Premises	Infrastructure as a Service	Platform as a Service	Software as a Service
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   Other Manages

Service Models

Pizza Analogy for Service Model Comparison

Traditional On-Premises (On Prem)	Infrastructure as a Service (IaaS)	Platform as a Service (PaaS)	Software as a Service (SaaS)
Dining Table	Dining Table	Dining Table	Dining Table
Soda	Soda	Soda	Soda
Electric / Gas	Electric / Gas	Electric / Gas	Electric / Gas
Oven	Oven	Oven	Oven
Fire	Fire	Fire	Fire
Pizza Dough	Pizza Dough	Pizza Dough	Pizza Dough
Tomato Sauce	Tomato Sauce	Tomato Sauce	Tomato Sauce
Toppings	Toppings	Toppings	Toppings
Cheese	Cheese	Cheese	Cheese
Made at home	**Take & Bake**	**Pizza Delivered**	**Dined Out**

🟦 You Manage 🟩 Vendor Manages

- **On-Premise Model**; You take **all** the ingredients-Make it yourself

- **IaaS Model**; You buy **some** ingredients- Make it yourself

- **Paas Model**; Order pizza delivered

- **Saas Model**; Go to the pizzeria.

Getting Started with AWS

Table of Contents

- Introduction to AWS

- What does AWS offer?

- AWS Infrastructure

- AWS Free Tier

- Creating an AWS Account

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Introduction to AWS

1

Introduction to AWS

What is AWS?

- AWS stands for **Amazon Web Services.**

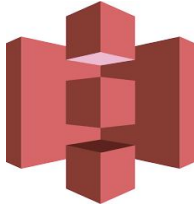- Amazon Web Services (AWS) is the world's most comprehensive and broadly adopted **Cloud Platform.**

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Introduction to AWS

What is AWS?

IAM	S3	EC2	Cloudformation	Elastic Beanstalk

- AWS provides **on-demand** delivery of **technology services** via internet**.**

- It offers **over 200** fully featured services.

GO

Introduction to AWS

Amazon Leads $200-Billion Cloud Market

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

Provider	Share
aws	34%
Azure	21%
Google Cloud	10%
Alibaba Cloud	5%
IBM Cloud	4%
salesforce	3%
Tencent Cloud	3%
ORACLE CLOUD	2%
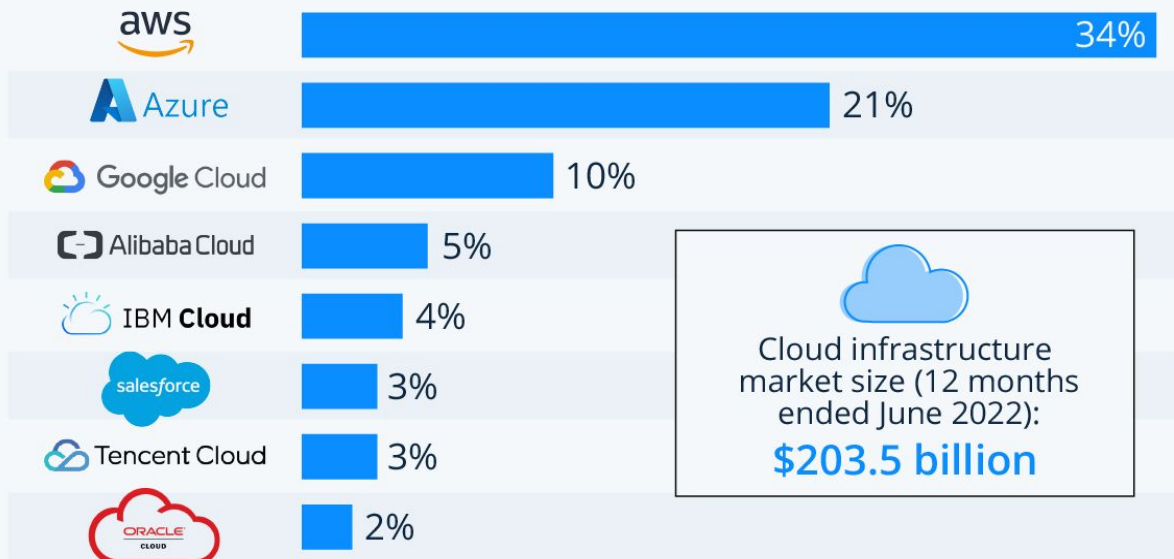
Cloud infrastructure market size (12 months ended June 2022): **$203.5 billion**

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Introduction to AWS
AWS Pros

- Many featured services and largest global infrastructure.

- Most comprehensive and broadly adopted provider.

- Pay-as-you-go.

- High availability and scalability.

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Introduction to AWS
AWS Cons

- Complex service functionalities can be a challenge for beginners.

- Billing can be confusing.

- Can be costly in comparison to others.

There is no cloud
it's just someone else's computer

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2 What does AWS offer?

What does AWS offer?
AWS Services

GO

What does AWS offer?
AWS Core Services
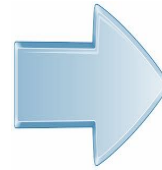
Cloud Storage
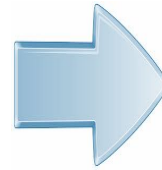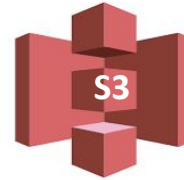
Cloud Computing
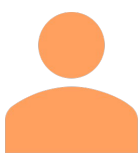
www.my-store.com

trigger

Staff

customer

Sign Up

VPC

CloudFront

AWS Lambda

- Web Server work in EC2 machine
  (nginx-apache httpd)
- Auto Scaling
- Load Balancing

- Register domain name of the website
- Publishing on Internet
- Routing policies

- Best seller images,
- Inventory List etc.
- Data Log

-Customer info
-System Backups

EC2

AWS Route 53
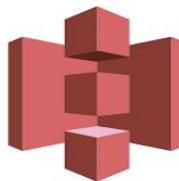
S3

RDS

3 AWS Infrastructure

AWS Infrastructure
Introduction
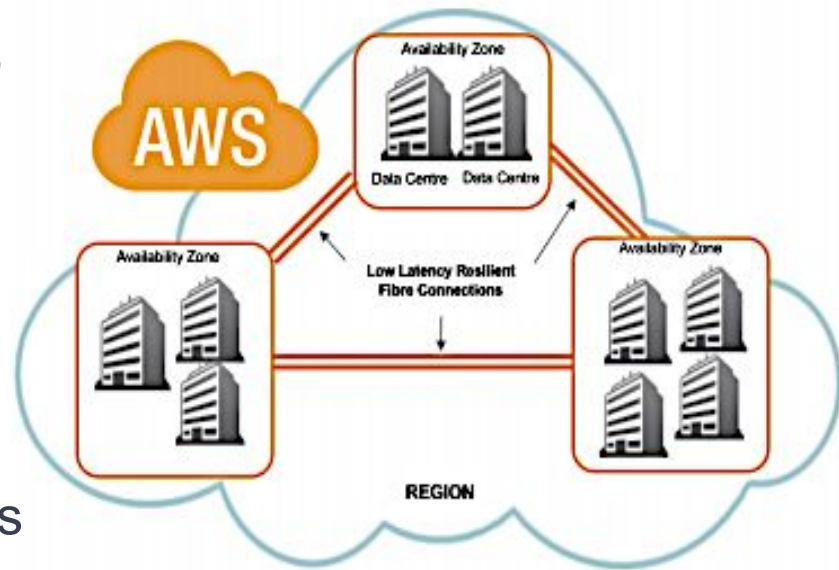
- AWS Regions and Availability Zones

- Multiple Availability Zones in AWS Region

- Availability Zones consist of one or more discrete Data Centers

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AWS Infrastructure
Introduction

Region   30

Availability Zones   96

Data Centers

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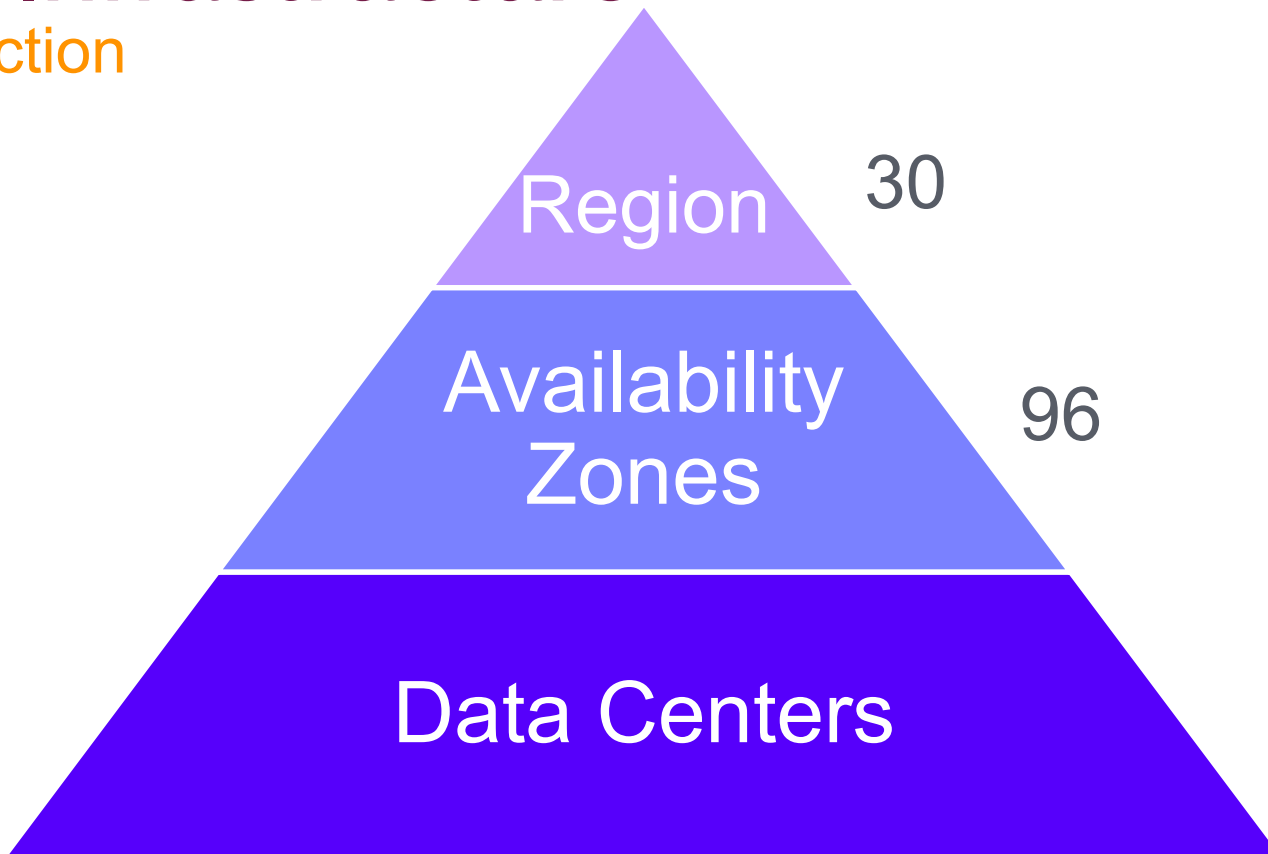
AWS Infrastructure
AWS Regions

N. Virginia is the region with the most service-support. In the other regions, not all services of AWS are in progress.

○ Current Regions

○ New Regions coming soon

Ireland

N.Virginia

Singapore

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33

AWS Infrastructure
AWS Availability Zones

AWS Infrastructure
AWS Availability Zones

- An Availability Zone is a facility where the data centers are located.

- There are currently 96 Availability Zones.

- All AZ's in an AWS region are interconnected with metro fiber.

- All traffic between AZ's is encrypted.

- AZ's are physically separated by a meaningful distance, many kilometers, from any other AZ, although all are within 100 km (60 miles of each other).

AWS Infrastructure
AWS Data Centers

- The data center infrastructure consists of **physical or hardware-based tools and components.**

- AWS data centers are **secure** by design.

Northern Virginia Data Center

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AWS Infrastructure
AWS Local Zones

- AWS Local Zones are a new type of AWS infrastructure deployment that places AWS compute, storage, database, and other select services closer to large population, industry, and IT centers **where no AWS Region exists today.**

- Each AWS Local Zone location is an **extension of an AWS Region**

- AWS Local Zones is now available only in **US.**

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4 AWS Free Tier

AWS Free Tier
What is AWS Free Tier?

GO
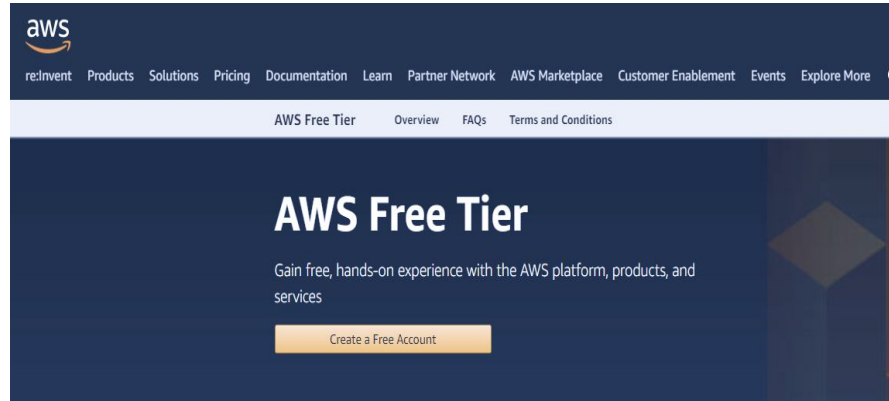
- The AWS free tier is a account type that lets you gain free, hands-on experience with AWS products and services.

- 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.

AWS Free Tier

The Free Tier is comprised of three different types of offerings;

- 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
Billing Policy

- You are recommended to set **a billing alarm** to stay within the limits.

- 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.

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Creating AWS Free Tier

4

Creating AWS Free Tier

https://aws.amazon.com/free

- Click, "**Create Free Account**"

IAM Users

What is Root User and IAM User.

AWS Account Owner - Root User (you)

- You-IAM User
- Bill-IAM User
- Tom-IAM User
- John-IAM User
- Kath-IAM User
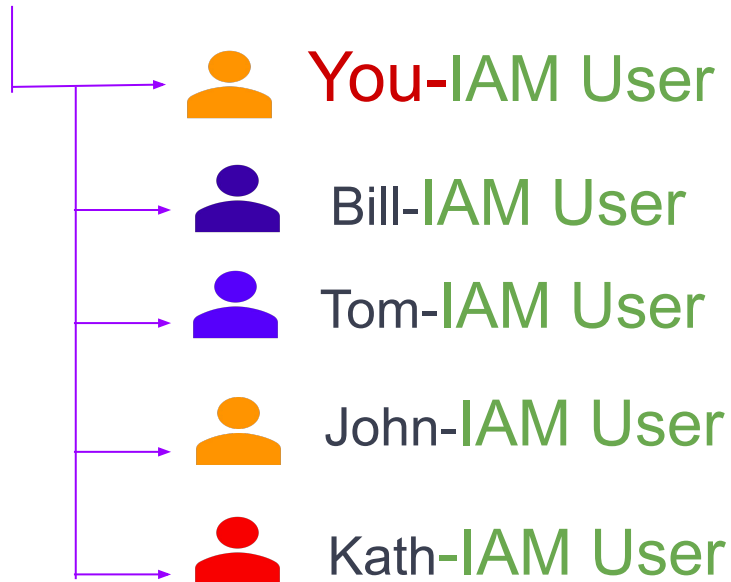
- Root User is a special user
- Username is email used to create account
- Generally, cannot limit permissions of Root User
- Cannot delete Root User
- Best practices:
  - Enable MFA for Root User
  - Don't user Root User for day-to-day work
  - Keep password in a secure location

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IAM Users
Access Types

AWS Management Console

Programmatic Access

ROOT USER

IAM USER.

IAM Users

Sign in with Root User- AWS Management Console Access

E-mail
Password

IAM Users

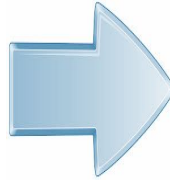## Sign in with IAM User- AWS Management Console Access

aws

Sign in

○ **Root user**
Account owner that performs tasks requiring unrestricted access. Learn more

● **IAM user**
User within an account that performs daily tasks. Learn more
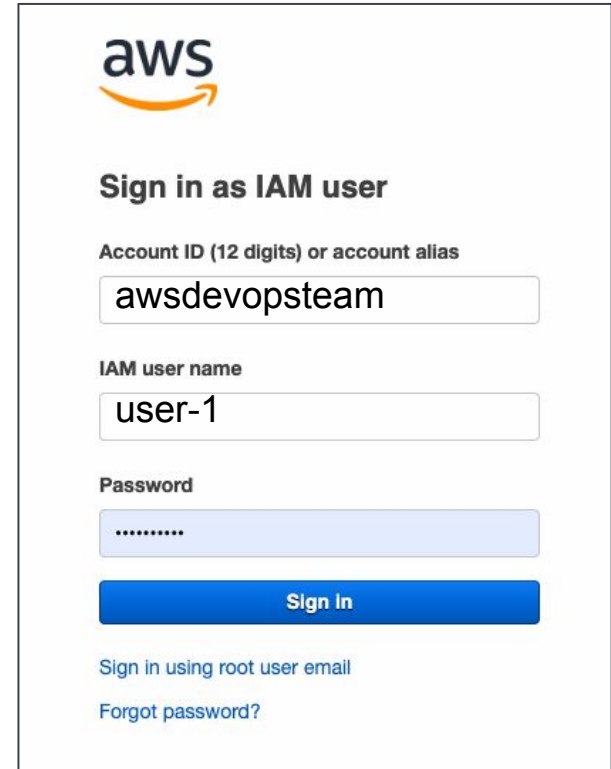
Account ID (12 digits) or account alias

awsdevopsteam

Next

Account ID/Alias

User name

Password

aws

Sign in as IAM user

Account ID (12 digits) or account alias
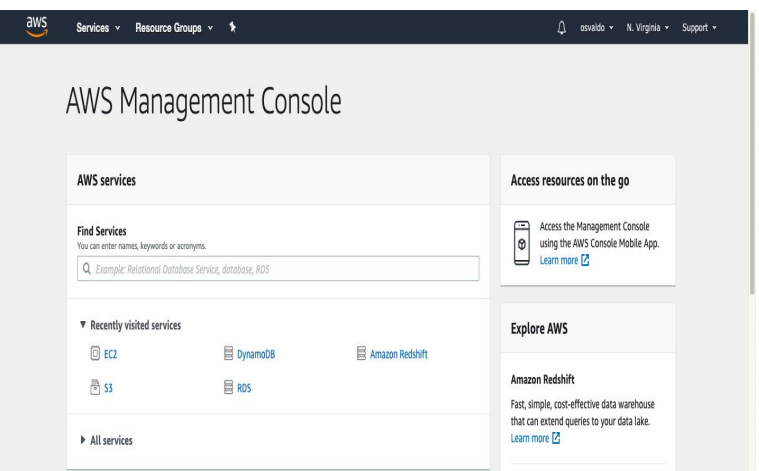
awsdevopsteam

IAM user name

user-1

Password

•••••••••

Sign In

Sign in using root user email

Forgot password?

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AWS Management Console

AWS Management Console

AWS services

Find Services
You can enter names, keywords or acronyms.

Example: Relational Database Service, database, RDS

▼ Recently visited services

EC2   DynamoDB   Amazon Redshift

S3   RDS

▶ All services

Access resources on the go

Access the Management Console using the AWS Console Mobile App.
Learn more

Explore AWS

Amazon Redshift

Fast, simple, cost-effective data warehouse that can extend queries to your data lake.
Learn more

Programmatic Access

IAM Users

Sign in with IAM User- **Programmatic Access**

SDKs

Android · iOS · Java · JavaScript · .NET

Node.js · PHP · Python (boto) · Ruby · Xamarin
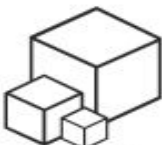
AWS CLI · AWS Toolkit for Eclipse · AWS Toolkit for Visual Studio · AWS Tools for Windows PowerShell

IAM Users

```
Last login: Fri Apr 24 22:44:56 on ttys000
Clarusway-MacBook-Air:~ user$




 Access Key ID !!!!!


Secret Access Key !!!!!
```

AWS CLI

**ROOT USER

IAM USER.

IAM Users

Sign in with IAM User- **AWS CLI**

YOUR TERMINAL

SECRET ACCESS KEY
ACCESS KEY ID

AWS CLI

THANKS!

Any questions?

You can find me at:

- ▶ @osvaldo
- ▶ osvaldo@clarusway.com

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Creating AWS Free Tier

Sign up for AWS

Explore Free Tier products with a new AWS account.

To learn more, visit aws.amazon.com/free.
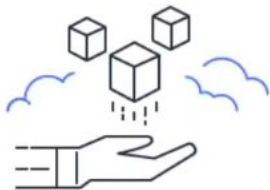
Email address
You will use this email address to sign in to your new AWS account.

Password

••••••••••••

Confirm password

••••••••••••

AWS account name
Choose a name for your account. You can change this name in your account settings after you sign up.

Tiny Technical Tutorials

Security check

Type the characters as shown above

Continue (step 1 of 5)

Creating AWS Free Tier

- Select "**Personal**" as an account Type and then fill your contact information.

Creating AWS Free Tier

Creating AWS Free Tier

- Confirm your identity by entering **your phone** number and code displayed in the captcha.

- Choose "Contact me ".

- If you chose to verify your account by SMS, choose "Send SMS" instead, like in the picture.

- Then enter the PIN you receive by text message or voice call, and then choose "Continue".

Sign up for AWS

Confirm your identity

Before you can use your AWS account, you must verify your phone number. When you continue, the AWS automated system will contact you with a verification code.

How should we send you the verification code?
- ● Text message (SMS)
- ○ Voice call

Country or region code

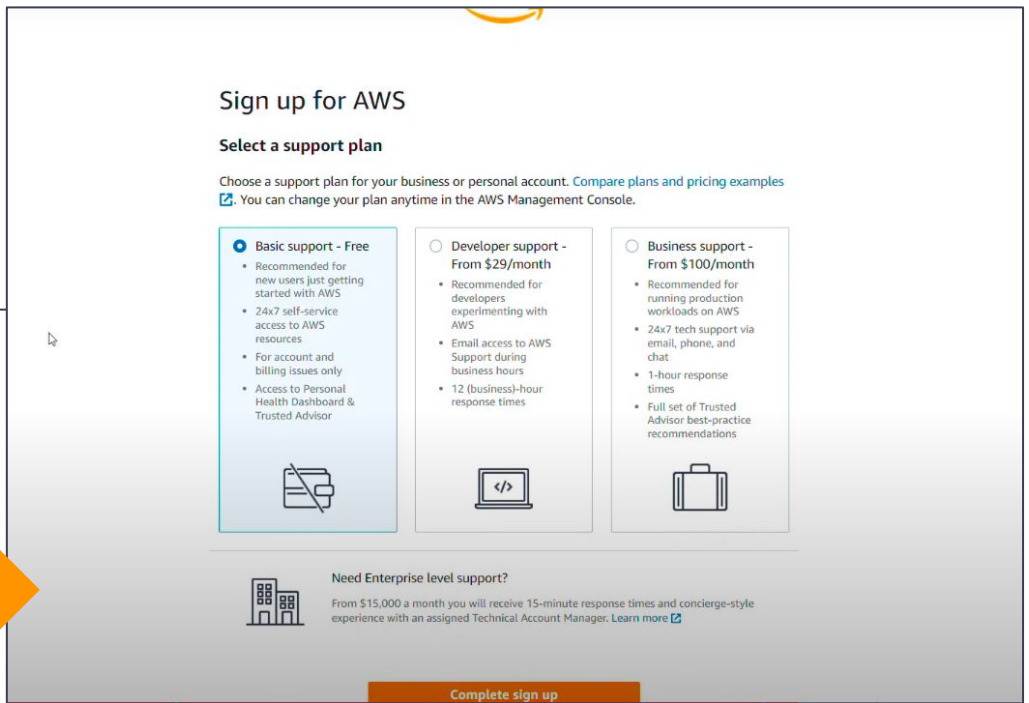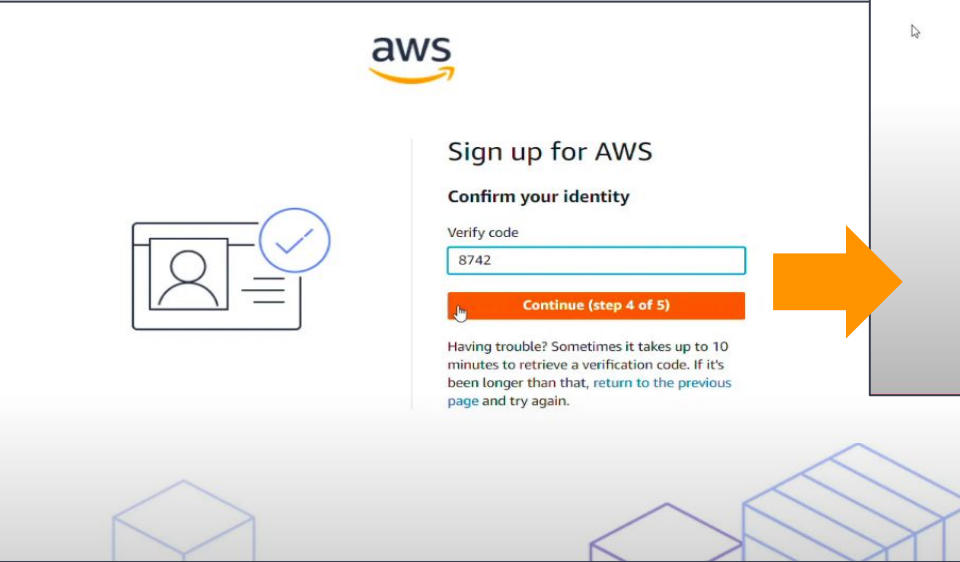United States (+1) ▼

Mobile phone number

Security check

Type the characters as shown above

Send SMS (step 4 of 5)

Creating AWS Free Tier

- After verification, select the support Plan. Choose the "**Basic Plan** " which is free.

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Creating AWS Free Tier

Congratulations!

Thank you for signing up with AWS.

We are activating your account, which should take a few minutes. You will receive an email when this is complete.

Go to the AWS Management Console

Sign up for another account or Contact Sales

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