



# Cloud Computing Basics





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- ▶ Introduction to Cloud Computing
- ▶ Why Cloud Computing?
  - Virtualization
  - Containerization Technology
  - Software Development Cycle
  - Serverless
- ▶ Service Model
- ▶ Deployment Models
- ▶ Conclusions



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# Introduction to Cloud Computing



# Introduction to Cloud Computing



**Tulip**



# Introduction to Cloud Computing



# Tulip

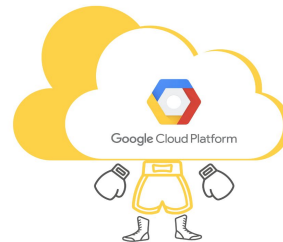
.com



# Introduction to Cloud Computing



[www.clarusway.com](http://www.clarusway.com)

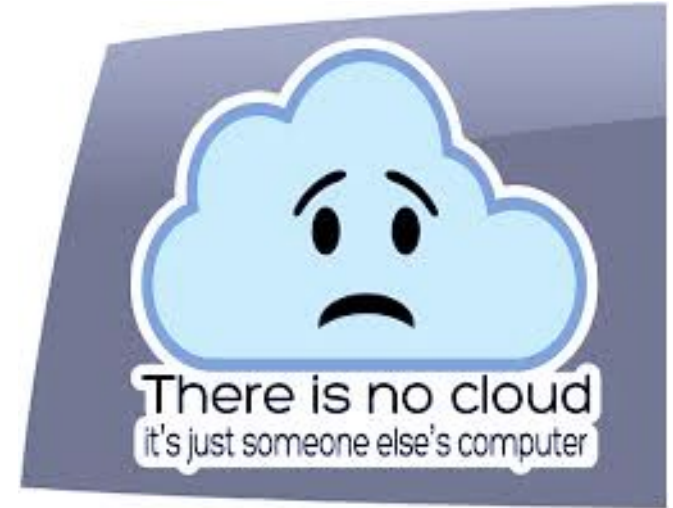


# Introduction to Cloud Computing



## 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.

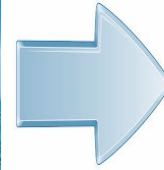
- Cloud usage is now spreading rapidly around the world.
- Examples of companies using cloud computing :
  - Google Drive,
  - Netflix,
  - Apple iCloud,
  - Dropbox,
  - Microsoft Office Online.



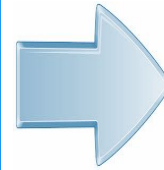
# What is Cloud Computing?



## Cloud Computing vs. Cloud Storage



Cloud  
Storage



Cloud  
Computing

Cloud



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# Why Cloud Computing?

# Why Cloud Computing?



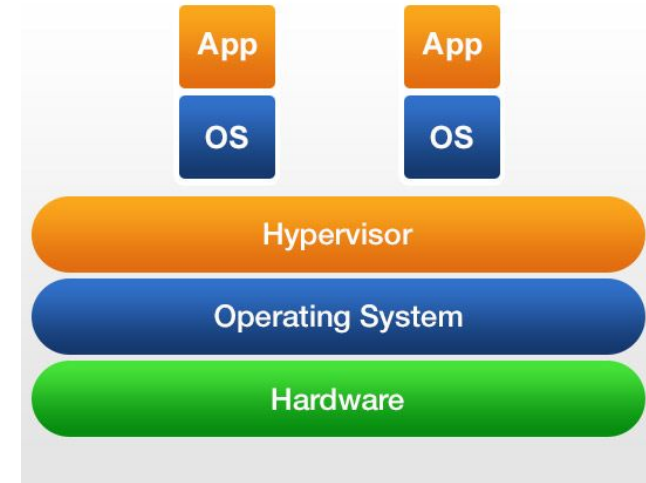
Zeitgeist (The spirit of the time)



# Why Cloud Computing: New Concepts



- Virtualization
- Containerization Technology
- Software Development Cycle
- Serverless



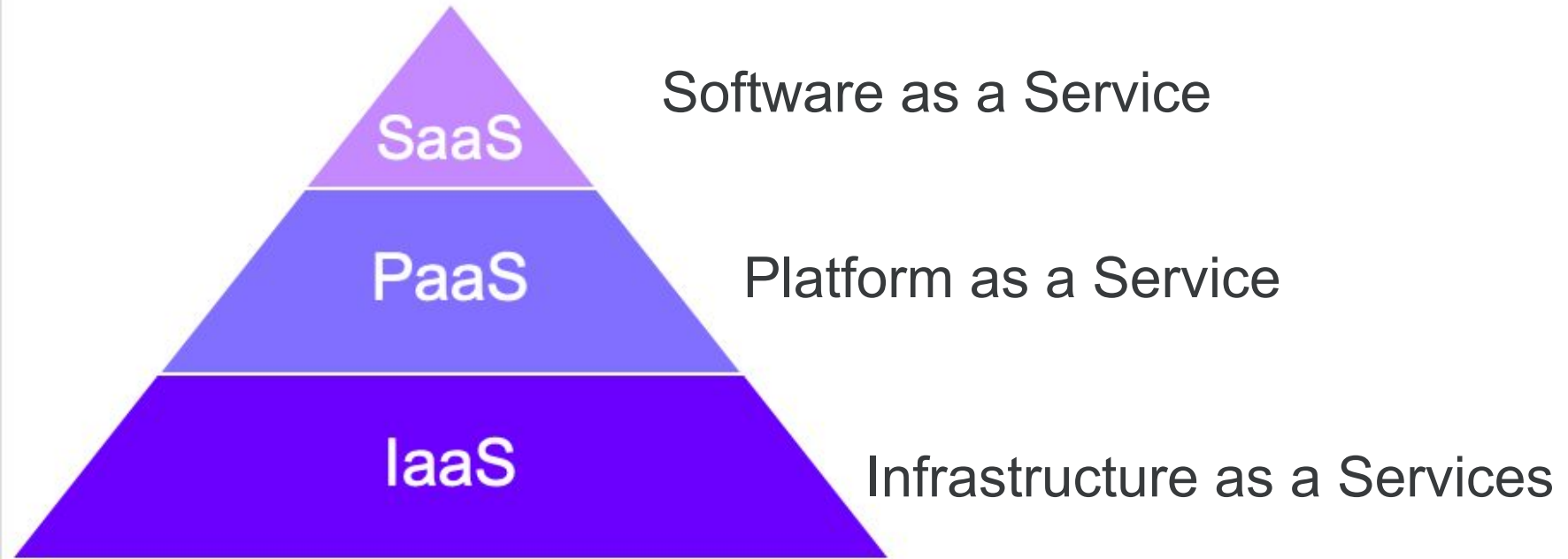


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# Service Models

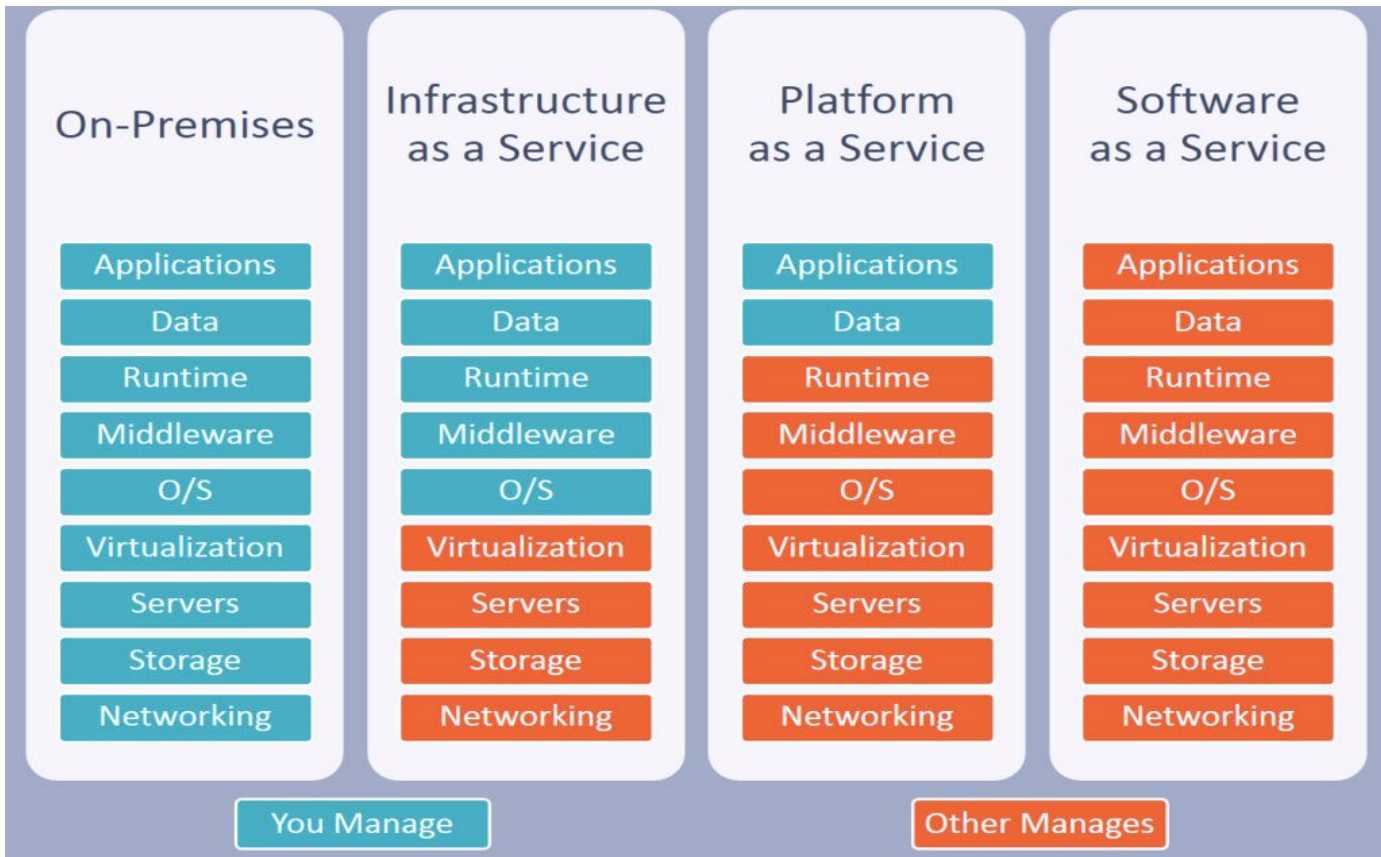
# Service Models

## Cloud Service Models



# Service Models

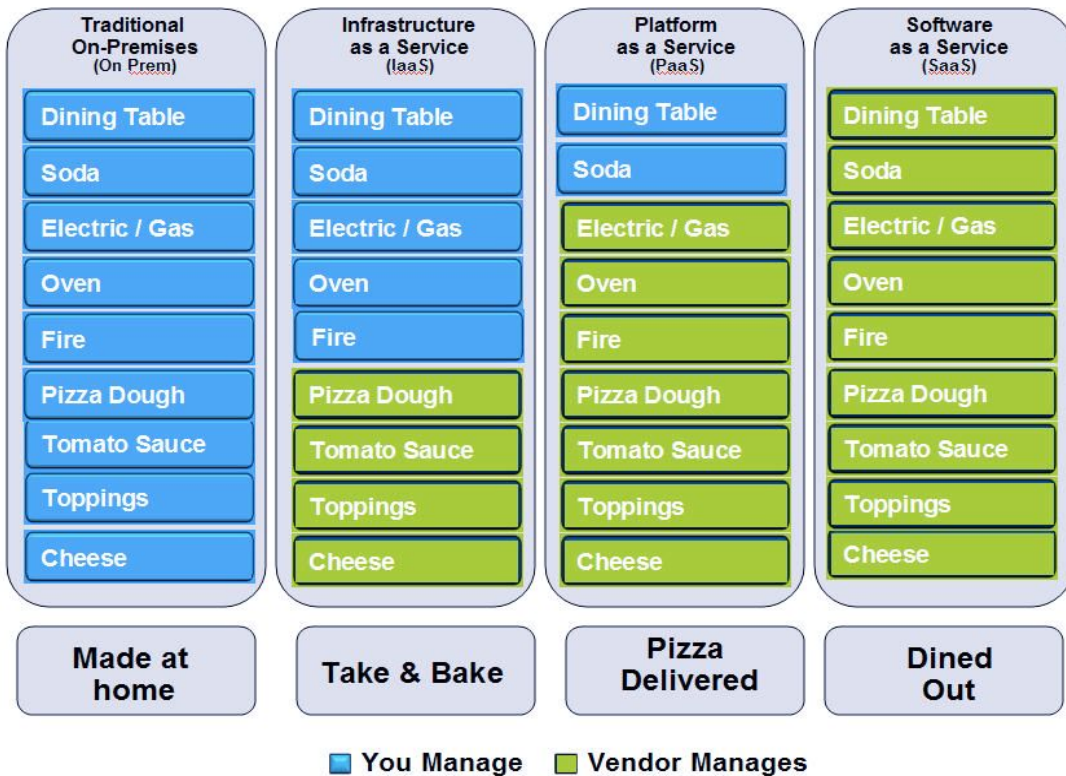
## Cloud Service Models





# Service Models

## Pizza Analogy for Service Model Comparison



- **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



**amazon**  
web services

1

# Introduction to AWS

# 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**.

# Introduction to AWS

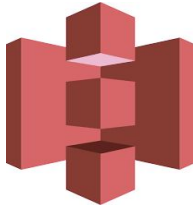
## What is AWS?



IAM



S3



EC2



Cloudformation



Elastic  
Beanstalk



- AWS provides **on-demand** delivery of **technology services** via internet.
- It offers **over 200** fully featured services.

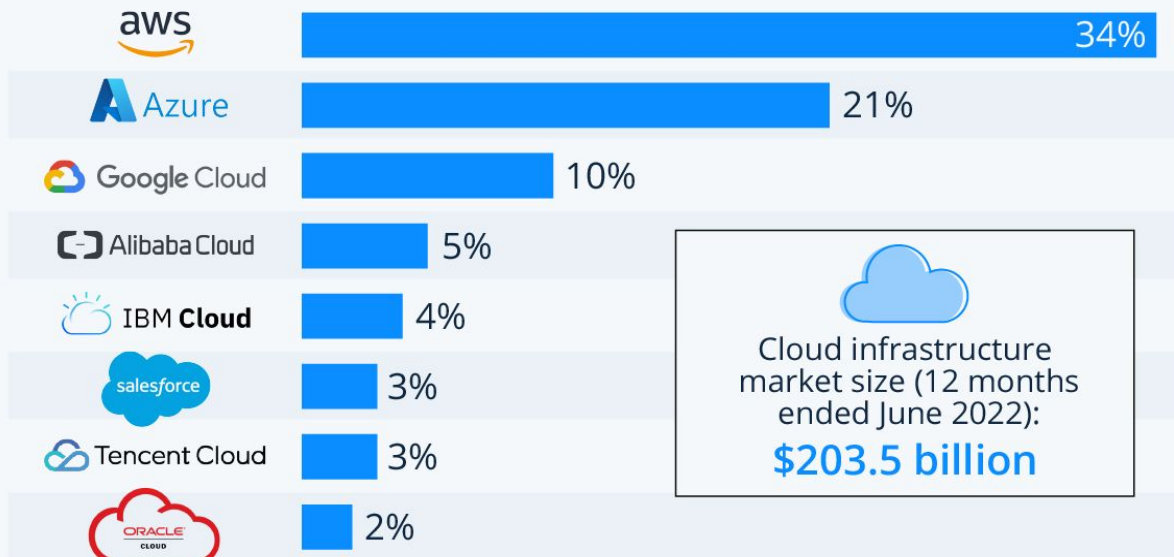
GO



# Introduction to AWS

## Amazon Leads \$200-Billion Cloud Market

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



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

GO



# 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.

GO





# 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.



GO



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# What does AWS offer?

# What does AWS offer?

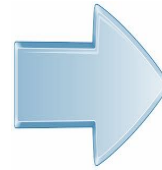
## AWS Services



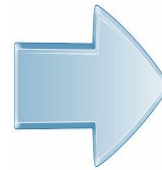
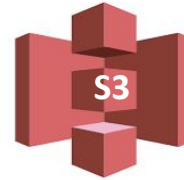
GO

# What does AWS offer?

## AWS Core Services

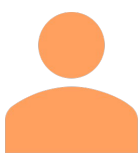


Cloud  
Storage



Cloud  
Computing





www.my-store.com

trigger



Staff

customer



CloudFront



AWS  
Lambda

VPC



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

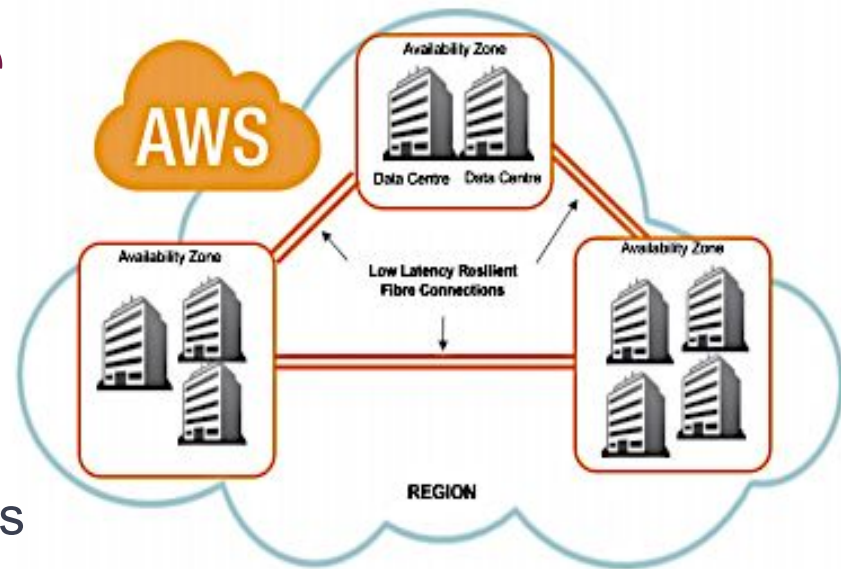


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# AWS Infrastructure

# AWS Infrastructure

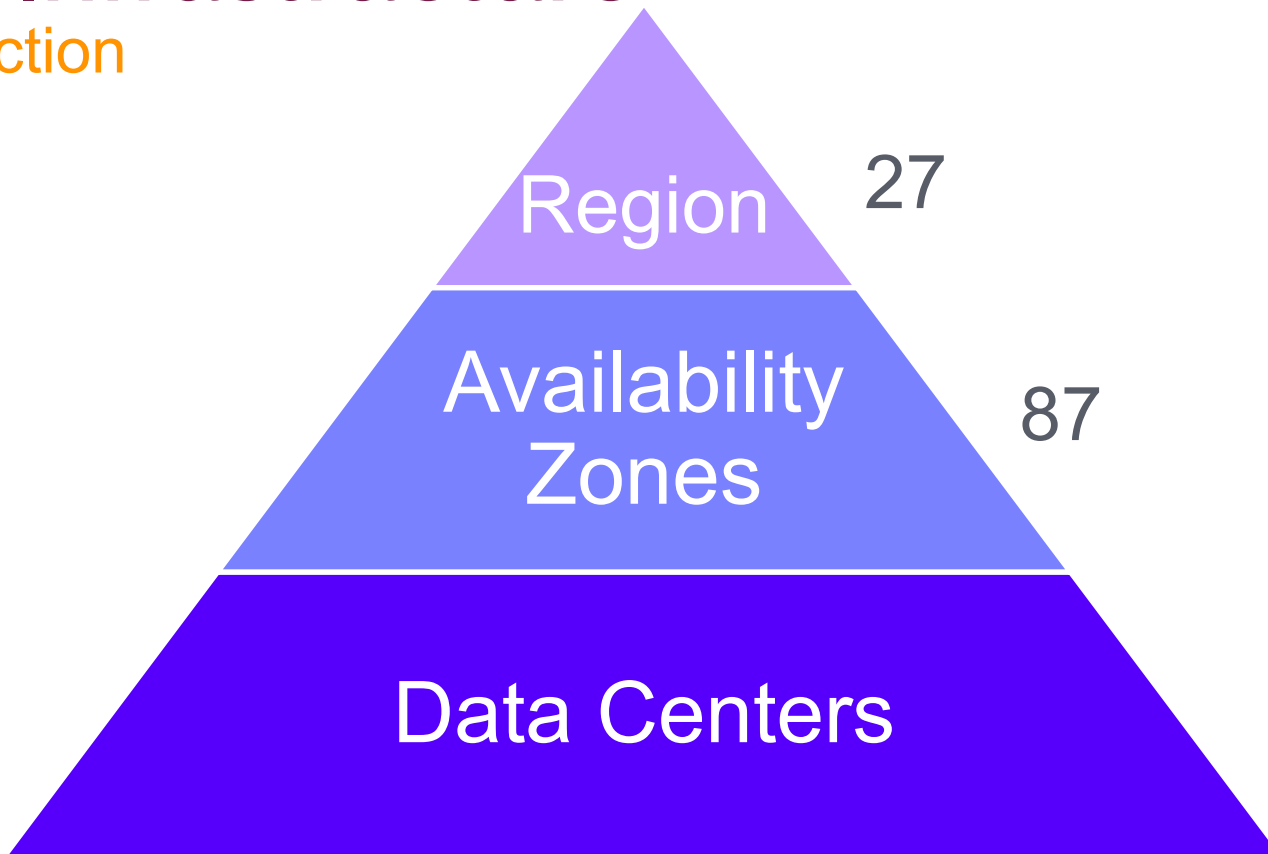
## Introduction



- AWS Regions and Availability Zones
- Multiple Availability Zones in AWS Region
- Availability Zones consist of one or more discrete Data Centers

# AWS Infrastructure

## Introduction





# AWS Infrastructure

## AWS Regions



27 Geographic 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

GO

# 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 87 Availability Zones (as of Sept 2022).
- 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

# 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.**

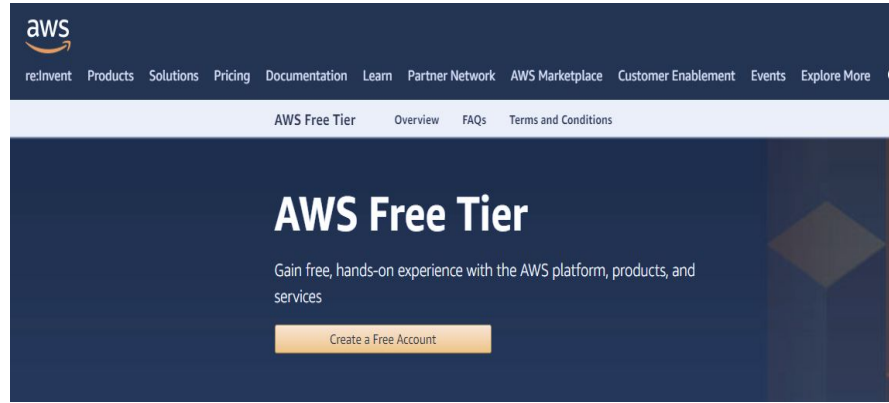


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# AWS Free Tier

# AWS Free Tier

## What is AWS Free Tier?



- 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

## Free Tier Offer Types



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.



GO



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# Creating AWS Free Tier



# Creating AWS Free Tier

<https://aws.amazon.com/free>

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

← → ↺ <https://aws.amazon.com/free> [Icons]

**aws** Contact Sales Support ▾ English ▾ My Account ▾ [Sign In to the Console](#)

[Products](#) [Solutions](#) [Pricing](#) [Documentation](#) [Learn](#) [Partner Network](#) [AWS Marketplace](#) [Customer Enablement](#) [Events](#) [Explore More](#) 🔍

**AWS Free Tier** [Overview](#) [FAQs](#) [Terms and Conditions](#)

## AWS Free Tier

Gain free, hands-on experience with the AWS platform, products, and services

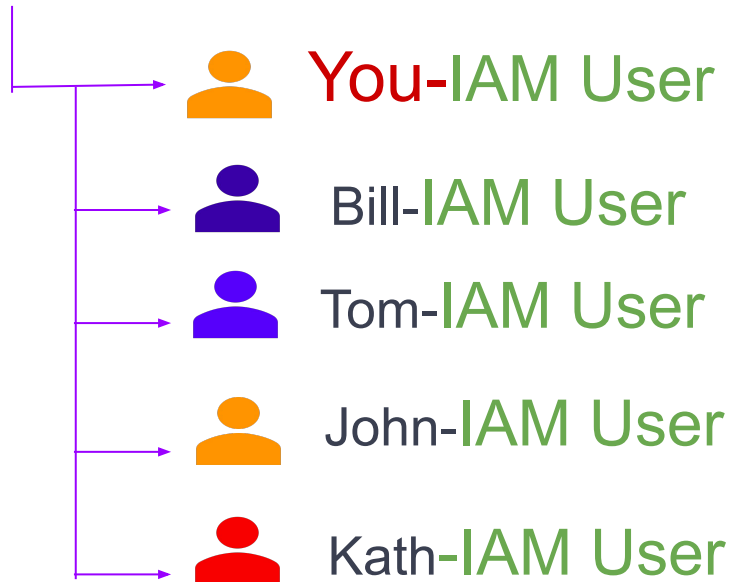
[Create a Free Account](#)

# IAM Users



What is Root User and IAM User.

## AWS Account Owner - Root User (you)



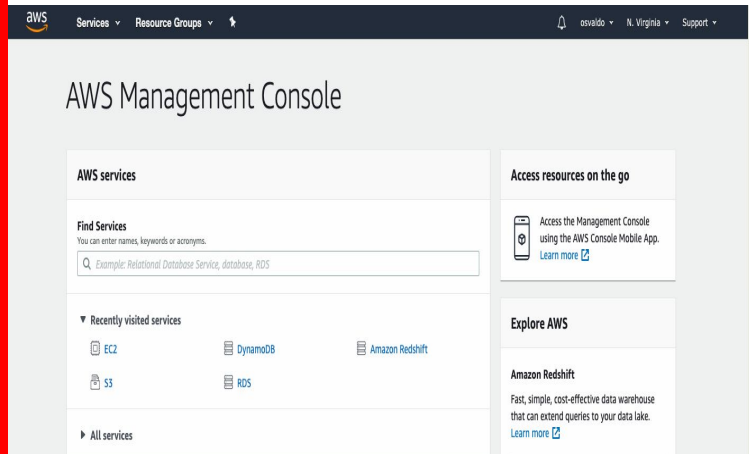
- Root User is a special user
- Username is **email** used to create account
- Generally, **cannot limit permissions** of Root User
- **Cannot delete** Root User
- Best practices:
  - **Enable MFA** for Root User
  - Don't user Root User for **day-to-day work**
  - Keep **password** in a secure location

# IAM Users

## Access Types



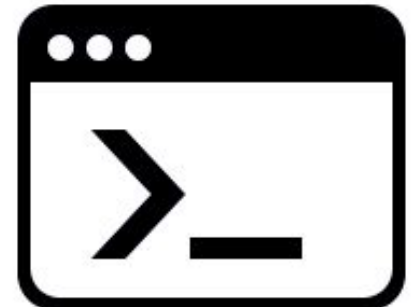
## AWS Management Console



**ROOT USER**

**IAM USER.**

## Programmatic Access

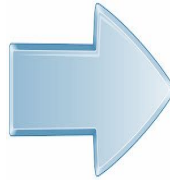


# IAM Users



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

The screenshot shows the AWS 'Sign in' page. At the top is the AWS logo. Below it, the text 'Sign in' is displayed. There are two radio button options: 'Root user' (selected) and 'IAM user'. The 'Root user' option has a description: 'Account owner that performs tasks requiring unrestricted access. [Learn more](#)'. The 'IAM user' option has a description: 'User within an account that performs daily tasks. [Learn more](#)'. Below these options is a section titled 'Root user email address' with a text input field containing 'osvaldo@clarusway.com'. At the bottom is a blue 'Next' button.



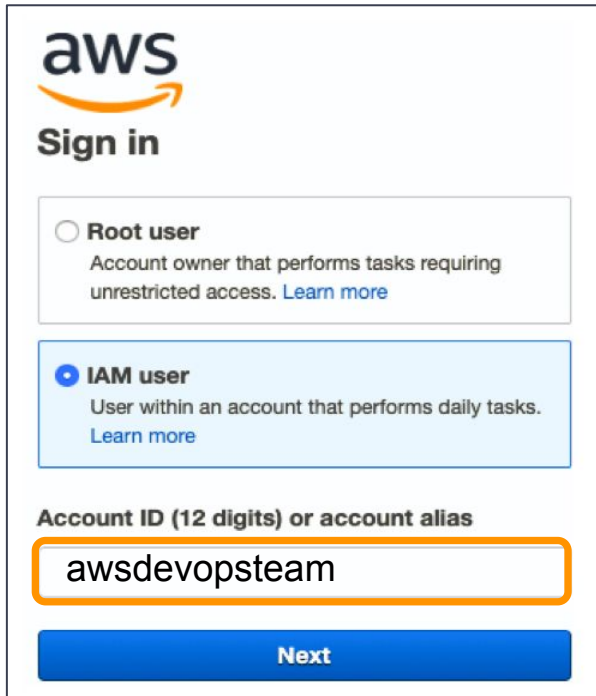
E-mail  
Password

The screenshot shows the 'Root user sign in' page. At the top is the AWS logo. Below it, the text 'Root user sign in ⓘ' is displayed. There is an 'Email' field with the value 'osvaldo@clarusway.com'. Below that is a 'Password' field with a masked password '.....'. To the right of the password field is a link 'Forgot password?'. Below the password field is a blue 'Sign in' button. At the bottom are two links: 'Sign in to a different account' and 'Create a new AWS account'.

# IAM Users



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



**aws**

**Sign in**

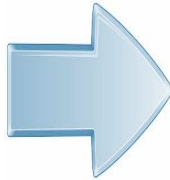
☐ **Root user**  
Account owner that performs tasks requiring unrestricted access. [Learn more](#)

☒ **IAM user**  
User within an account that performs daily tasks. [Learn more](#)

Account ID (12 digits) or account alias

**awsdevopsteam**

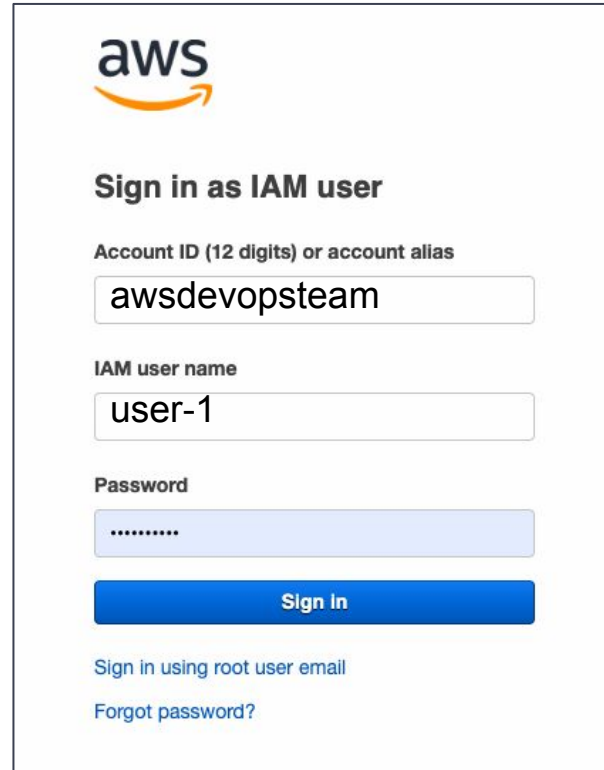
**Next**



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

.....

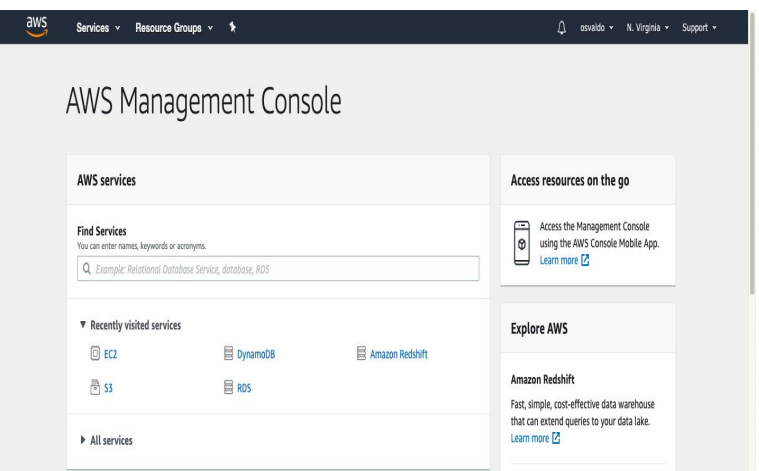
**Sign in**

[Sign in using root user email](#)

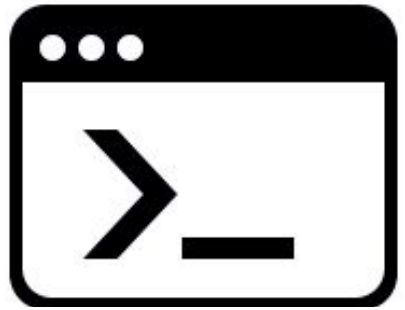
[Forgot password?](#)



# AWS Management Console



# Programmatic Access





# IAM Users



## Sign in with IAM User- Programmatic Access

### SDKs



Android



iOS



Java



JavaScript



.NET



Node.js



PHP



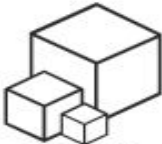
Python (boto)



Ruby



Xamarin



AWS CLI



AWS Toolkit  
for Eclipse



AWS Toolkit  
for Visual Studio



AWS Tools  
for Windows  
PowerShell

# IAM Users

## Sign in with IAM User- Programmatic Access



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

**Access Key ID !!!!!**

**Secret Access Key !!!!!**

**\*\*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

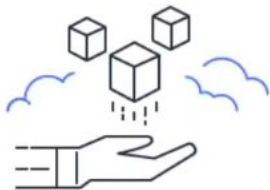




# Creating AWS Free Tier

Explore Free Tier products with a new AWS account.

To learn more, visit [aws.amazon.com/free](https://aws.amazon.com/free).



## Sign up for AWS

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.

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.

Sign up for AWS

**Contact Information**

How do you plan to use AWS?

☐ Business - for your work, school, or organization

☒ Personal - for your own projects

Who should we contact about this account?

Full Name

Phone Number

Enter your country code and your phone number.

+1 222-333-4444

Country or Region

United States ▼

Address

Apartment, suite, unit, building, floor, etc.


City



# Creating AWS Free Tier



## Secure verification

 We will not charge for usage below AWS Free Tier limits. We temporarily hold \$1 USD/EUR as a pending transaction for 3-5 days to verify your identity.



## Sign up for AWS

### Billing Information

Credit or Debit card number



AWS accepts all major credit and debit cards. To learn more about payment options, review our [FAQ](#)

Expiration date

Month

▼

Year

▼

Cardholder's name

Billing address

- ☒ Use my contact address  
PO Box 318  
Pacific Beach WA 98571  
US

☐ Use a new address

**Verify and Continue (step 3 of 5)**

You might be redirected to your bank's website to authorize the verification charge.



# 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.



Sign up for AWS

Confirm your identity

Verify code

8742

[Continue \(step 4 of 5\)](#)

Having trouble? Sometimes it takes up to 10 minutes to retrieve a verification code. If it's been longer than that, [return to the previous page](#) and try again.






Sign up for AWS

Select a support plan

Choose a support plan for your business or personal account. [Compare plans and pricing examples](#)

[You can change your plan anytime in the AWS Management Console.](#)

<p><input checked="" type="radio"/> <b>Basic support - Free</b></p> <ul style="list-style-type: none"><li>Recommended for new users just getting started with AWS</li><li>24x7 self-service access to AWS resources</li><li>For account and billing issues only</li><li>Access to Personal Health Dashboard &amp; Trusted Advisor</li></ul> 	<p><input type="radio"/> <b>Developer support - From \$29/month</b></p> <ul style="list-style-type: none"><li>Recommended for developers experimenting with AWS</li><li>Email access to AWS Support during business hours</li><li>12 (business)-hour response times</li></ul> 	<p><input type="radio"/> <b>Business support - From \$100/month</b></p> <ul style="list-style-type: none"><li>Recommended for running production workloads on AWS</li><li>24x7 tech support via email, phone, and chat</li><li>1-hour response times</li><li>Full set of Trusted Advisor best-practice recommendations</li></ul> 
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**Need Enterprise level support?**

From \$15,000 a month you will receive 15-minute response times and concierge-style experience with an assigned Technical Account Manager. [Learn more](#)

[Complete sign up](#)



# 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](#)