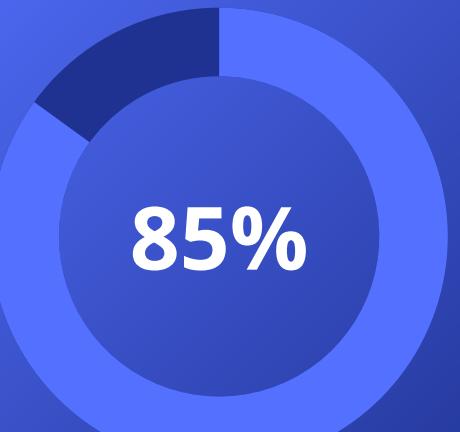
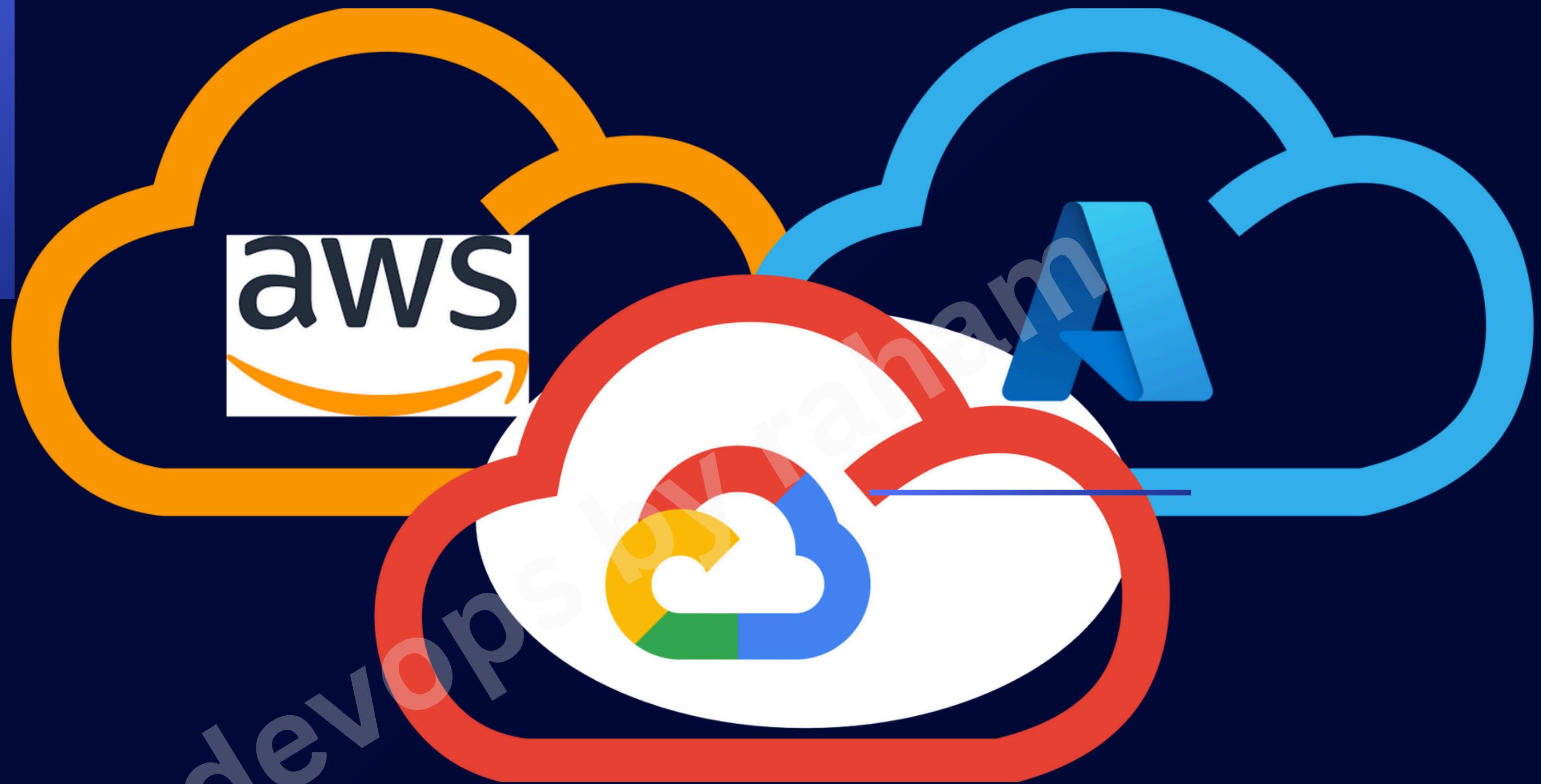


# WHAT IS MULTI-CLOUD



85%



As of 2025, the use of multi-cloud strategies has become mainstream across industries. Here's a data-backed summary

# INTRODUCTION

Multi-cloud means a company uses two or more cloud providers—such as AWS, Azure, GCP, Etc To deploy the infrastructure & applications

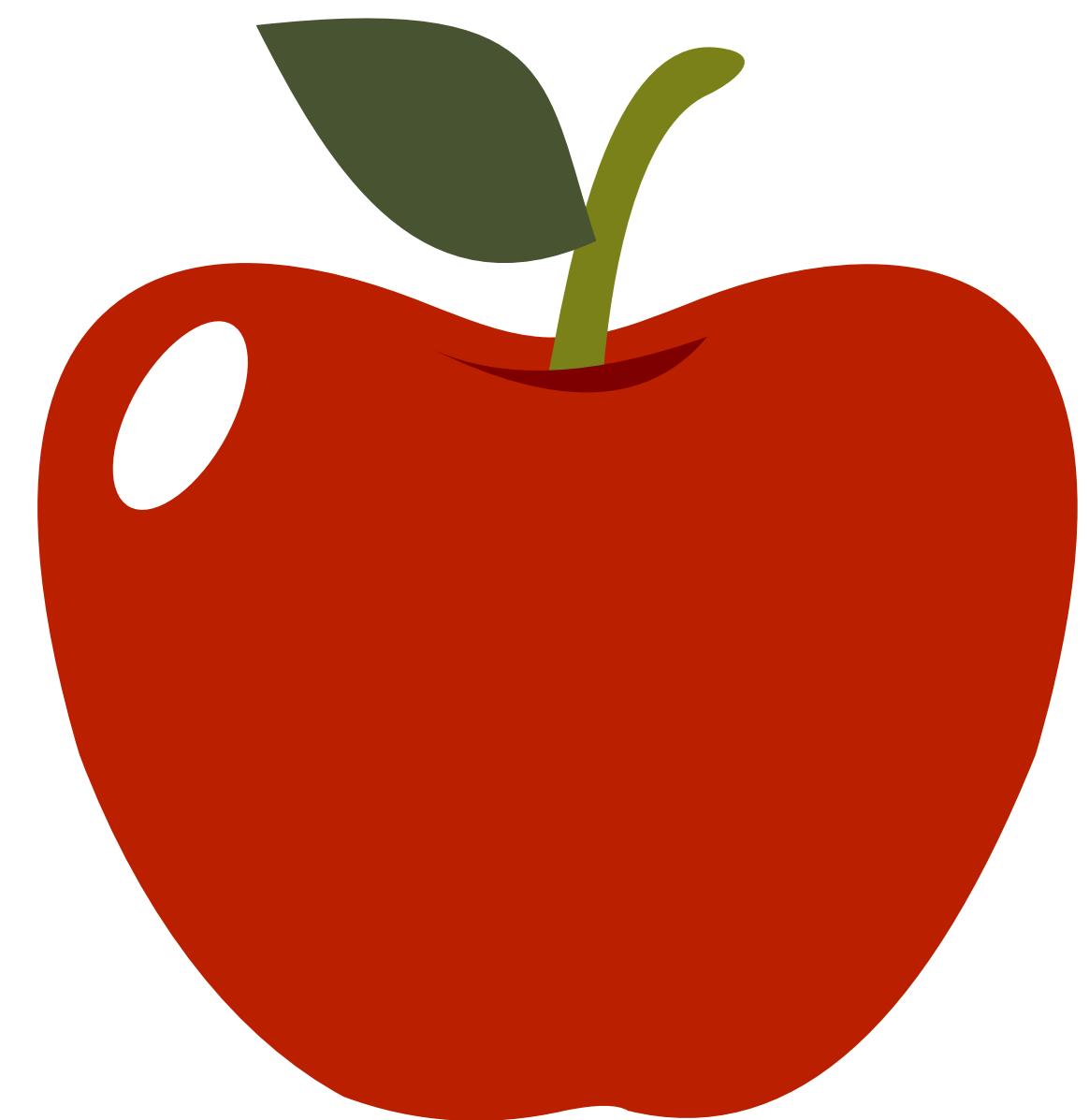


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**30 RS**

# RATNADEEP



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# STORAGE PER GB

Cloud provider	Storage (GB/Month)
Amazon S3	\$0.023
Azure	\$0.018 (Hot)
Google Cloud Platform	\$0.023
Oracle Object Storage – Standard	\$0.0255

# COMPUTE 4 CPU & 16 GB RAM

Cloud provider	Instance type	Price
AWS	t4g.xlarge	\$0.1344
Azure	B4ms	\$0.166
Google Cloud Platform	e2-standard-4	\$0.1509
Oracle	VM.Standard3.Flex	\$0.0899

# DISCOUNT PER 1 YEAR

Cloud provider	Instance type	Price	Discount
AWS	t4g.xlarge	\$0.0905	33%
Azure	B4ms	\$0.1118	32%
Google Cloud Platform	e2-standard-4	\$0.0950	37%
Oracle	Not offered	-	-

# SPOT INSTANCES

Cloud Provider	aws	gcp	az
Average number of distinct Spot prices per instance type per month	197.5	0.3	0.8

# ADVANTAGES

---

01

Avoid Vendor  
Lock-In

02

High  
Availability

03

Best-of-Breed  
Services

04

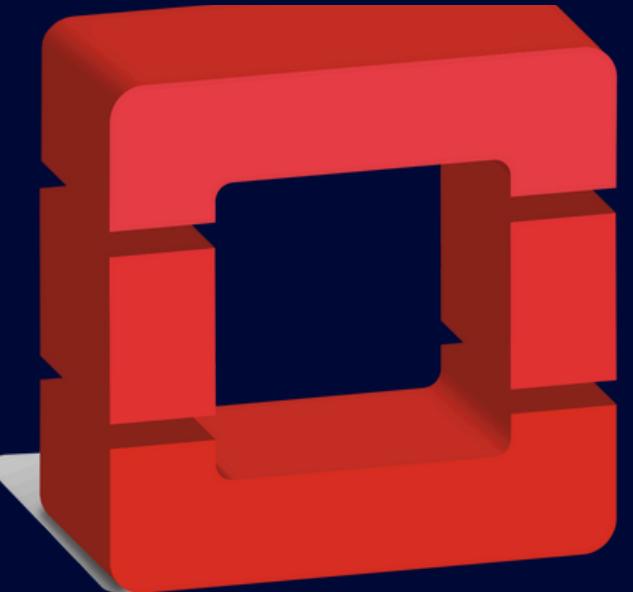
Geographical  
Compliance



# HISTORY

---

- NASA's Nebula Project (2008-2011) and OpenStack (launched in 2010) are considered the starting point.
- NASA + Rackspace launched OpenStack to avoid lock-in with AWS and to build their own open-source cloud infrastructure.



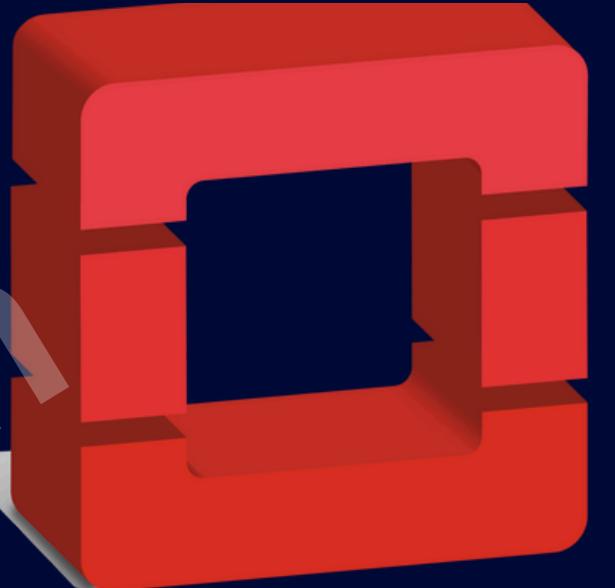
openstack

devops by natalia

# WHAT IS OPEN STACK ?

---

- Its a open-source cloud infrastructure platform.
- It allows anyone (governments, enterprises, universities) to build their own cloud—private or public.
- Provides services similar to AWS: compute (Nova), storage (Swift), networking (Neutron), identity management (Keystone), and more.



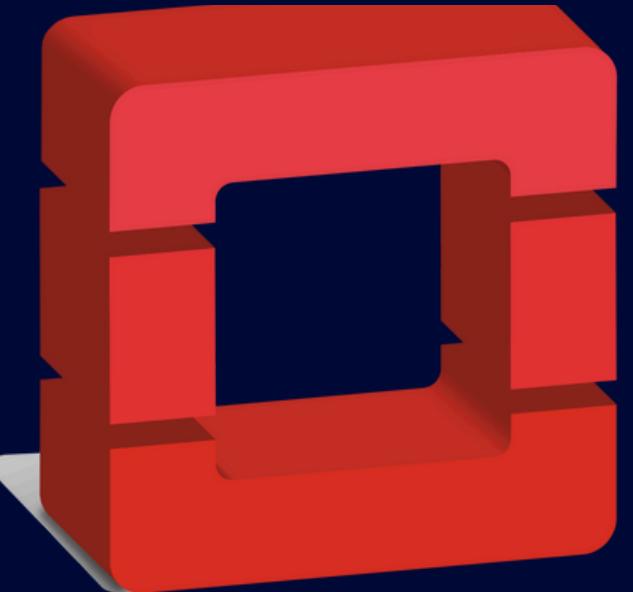
openstack

devops by Graham

# HISTORY

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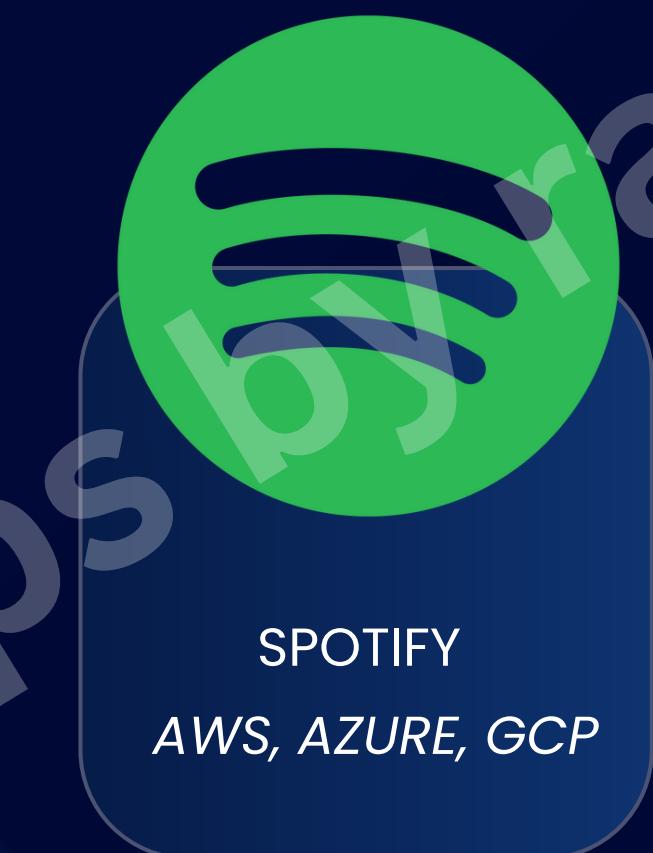
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openstack

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# BIG PLAYERS



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# BIG PLAYERS



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AWS

AZURE

GCP

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# LETS START WORKING NOW

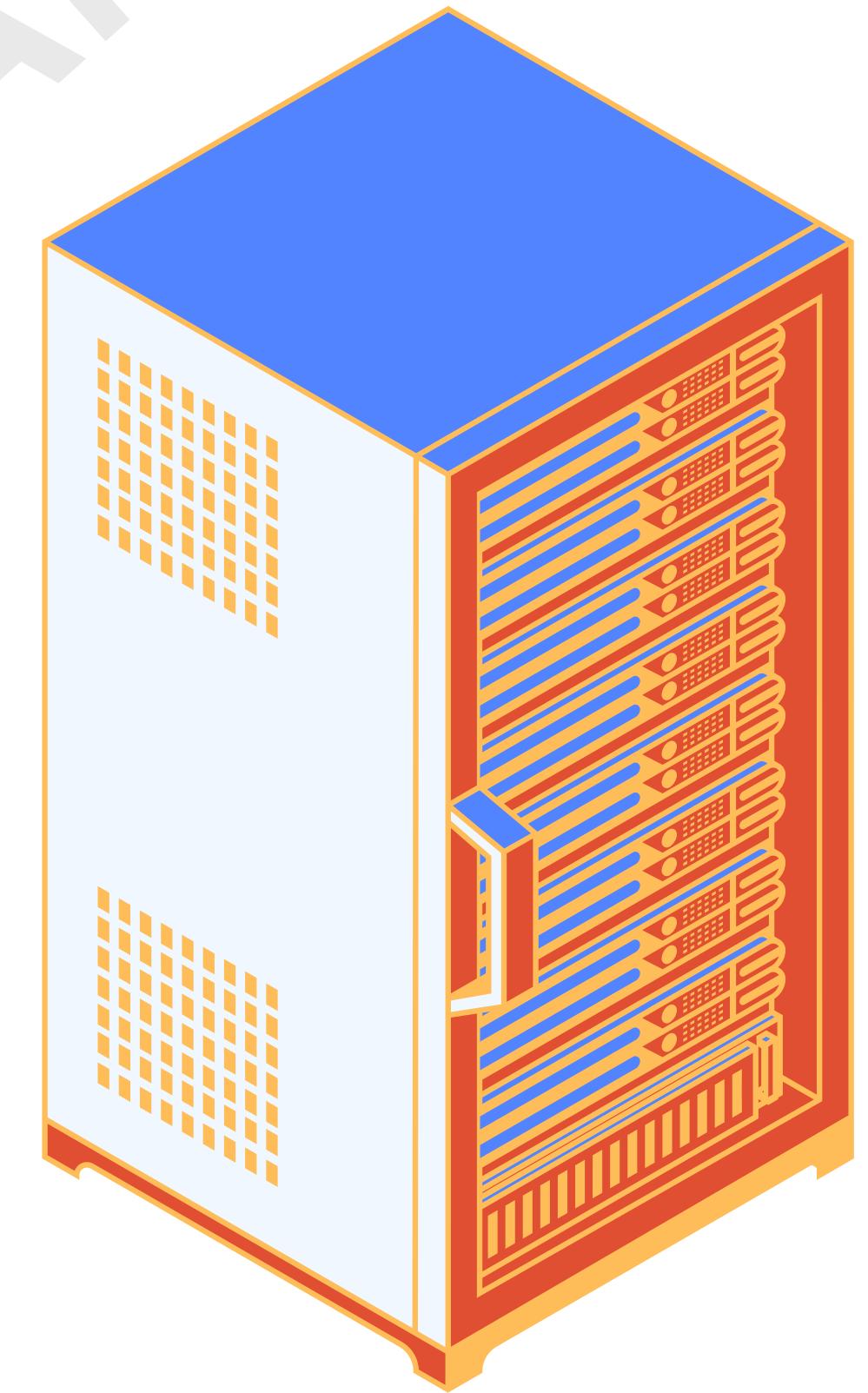




# COMPUTER



# SERVER



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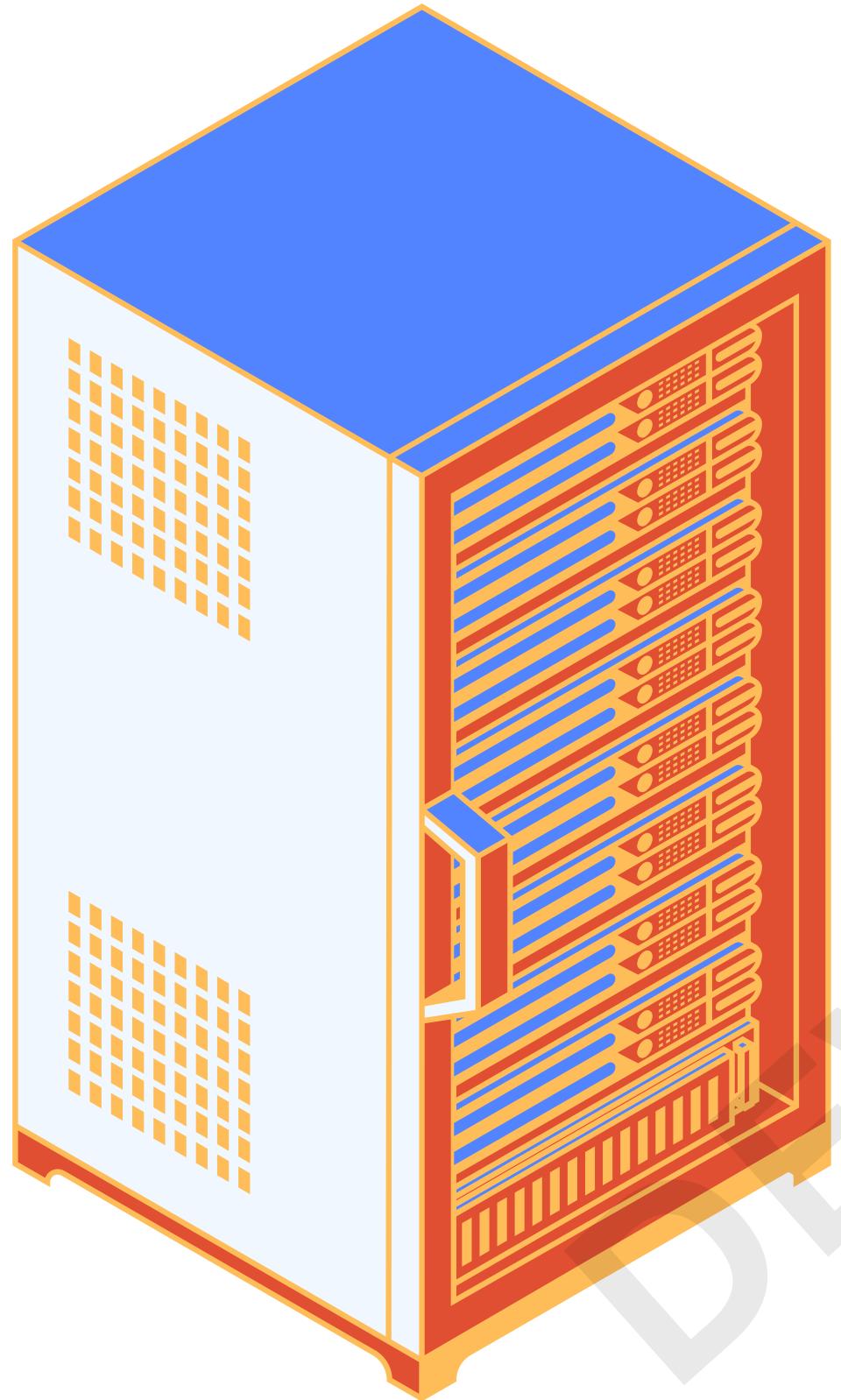
# COMPUTER



# MAIN COMPONENTS

**OPERATING SYSTEM**  
**HARDWARE (CPU, RAM)**  
**SECURITY**  
**NETWORK**  
**STORAGE**

# SERVER



# MAIN COMPONENTS

**OPERATING SYSTEM  
HARDWARE (CPU, RAM)  
SECURITY  
NETWORK  
STORAGE**

# STEPS TO CREATE EC2



# STEP-1: NAME & TAGS



**TAGS: TO IDENTIFY SERVERS**

**NAME : WEB-SERVER**

**CLIENT: SWIGGY**

**ENV : PRODUCTION**

DEVELOP & DEPLOY

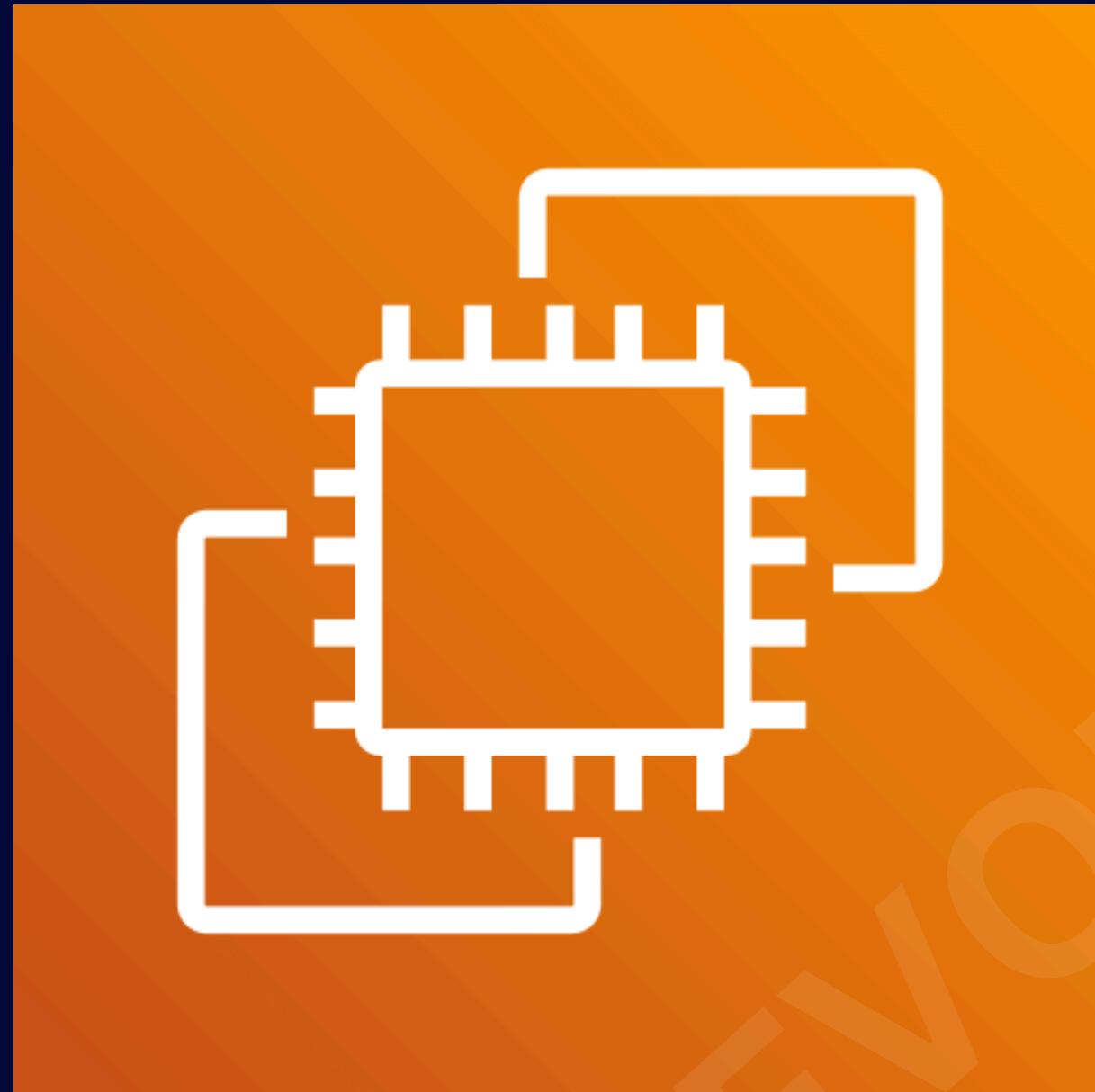
## STEP-2: AMAZON MACHINE IMAGE



OPERATING SYSTEM  
SOFTWARES  
ETC ---

DEVELOPS BY RAHAM

## STEP-3: INSTANCE TYPE



### CPU & RAM

DEFAULT: T2.Micro

1-CPU & 1-GB RAM

MAX: u-24tb1.metal

448-CPUS & 24,576-GB RAM

## STEP-4: KEY-PAIR



FOR SAFE & SECURE LOGIN TO SERVER

1. PUBLIC KEY: Store by AWS
2. PRIVATE KEY: Store by User

PRIVATE KEY: (PEM & PPK)

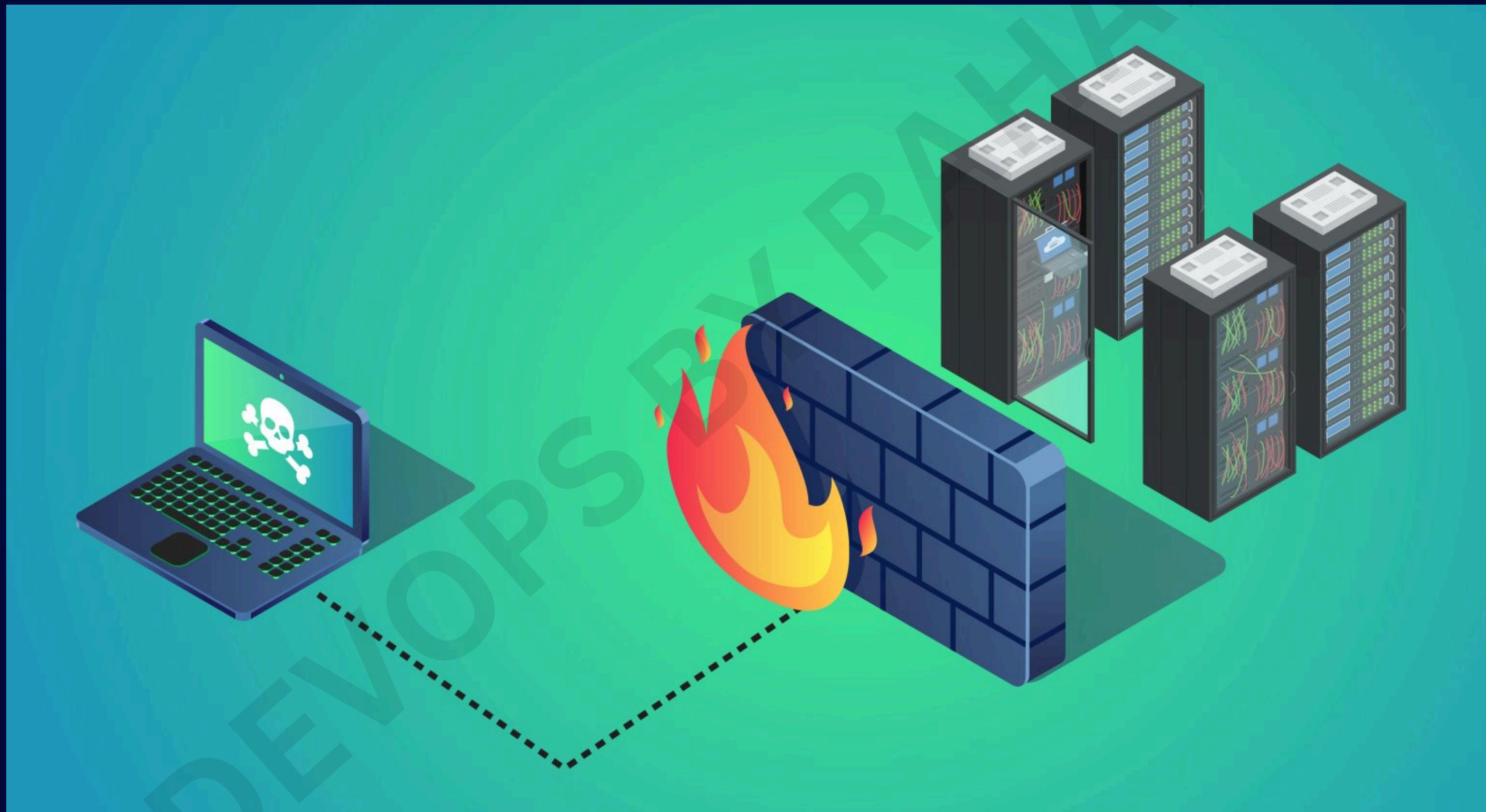
## STEP-5: NETWORK & SECURITY



**VPC: VIRTUAL PRIVATE CLOUD**

- 1. USED TO ISOLATE SERVERS
- 2. RESPONSIBLE FOR NETWORK
- 3. CREATES OUR OWN NETWORK

# STEP-5: FIREWALL



# SECURITY GROUPS

USED TO ALLOW/DENY TRAFFIC TO SERVERS

IMPORTANT RULES:

SSH: SECURE SHELL : 22

HTTP : 80

HTTPS : 443

## STEP-6: STORAGE



**EBS: ELASTIC BLOCK STORAGE**  
**TO PROVIDE STORAGE FOR THE SERVER**  
**DEFAULT: 8GB MAX: 16 TB**

# STEP-7: ADVANCE DETAILS

SCRIPTS

PERMISSIONS

SERVER BEHAVIOUR

SERVER PLACEMENT

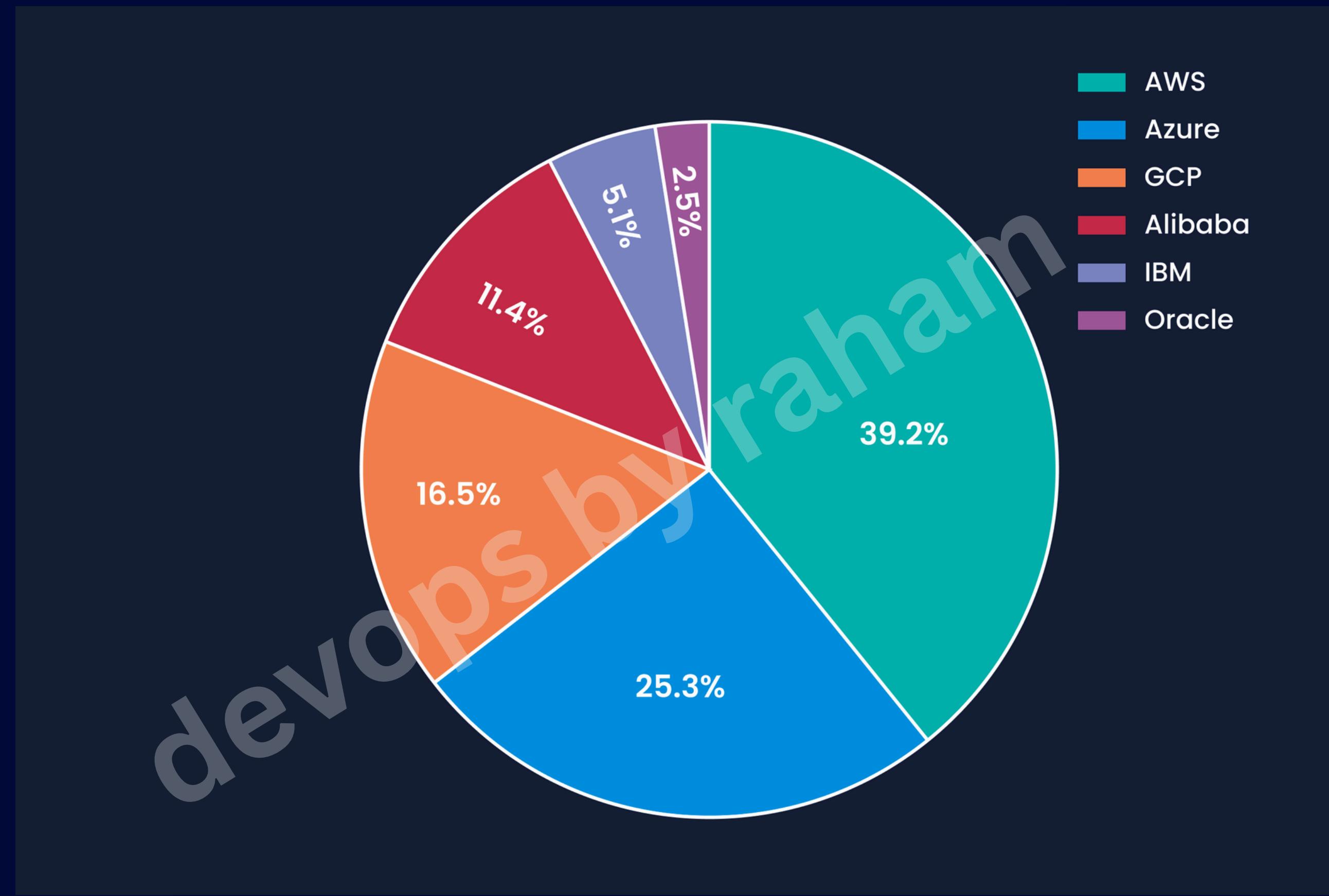
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DEVELOPED BY RAHAM

# SCRIPT TO DEPLOY APP

```
#!/bin/bash
sudo -i
apt update
apt install git nginx -y
git clone https://github.com/karishma1521success/swiggy-clone.git
mv swiggy-clone/* /var/www/html/
```

Step	AWS (EC2)	Azure (VM)	GCP (Compute Engine)
Cloud : Name & Tags	<b>Name &amp; Tags</b> (instance name + key=value tags)	<b>Resource Name &amp; Tags</b> (VM name + resource tags)	<b>Instance Name &amp; Labels</b> (VM name + key=value labels)
AMI (OS Image)	<b>AMI (Amazon Machine Image)</b>	<b>Image / Marketplace Image</b>	<b>Image / Public Image</b>
Instance Type (CPU/RAM)	<b>Instance Type</b> (e.g., t3.micro)	<b>VM Size</b> (e.g., B1s, D2s_v3)	<b>Machine Type</b> (e.g., e2-micro, n1-standard-1)
Key Pair (SSH Access)	<b>Key Pair (EC2 Key Pair)</b>	<b>SSH Key / Key Vault Integration</b>	<b>SSH Key (metadata / OS Login)</b>
Network (VPC & Subnet)	<b>VPC + Subnet</b>	<b>Virtual Network (VNet) + Subnet</b>	<b>VPC Network + Subnetwork</b>
Firewall / Security	<b>Security Group (Inbound/Outbound rules)</b>	<b>Network Security Group (NSG)</b>	<b>Firewall Rules (applied at VPC or VM NIC level)</b>
Storage (Disks)	<b>EBS Volume (gp3, io1, etc.)</b>	<b>Managed Disk (Standard/Premium SSD/HDD)</b>	<b>Persistent Disk (Standard/SSD/Balanced)</b>
Advanced Settings	<b>IAM Role, User Data, Placement Group, Tenancy</b>	<b>Identity (Managed Identity), Extensions, Availability Set/Zone</b>	<b>Service Account, Startup Script, Availability Policy</b>





# STATS

01

Gartner (2024):  
"By 2025, more than 90% of enterprises  
will have a multi-cloud strategy."

02

Flexera State of the Cloud Report (2024):  
"89% of enterprises report having a multi-  
cloud strategy"

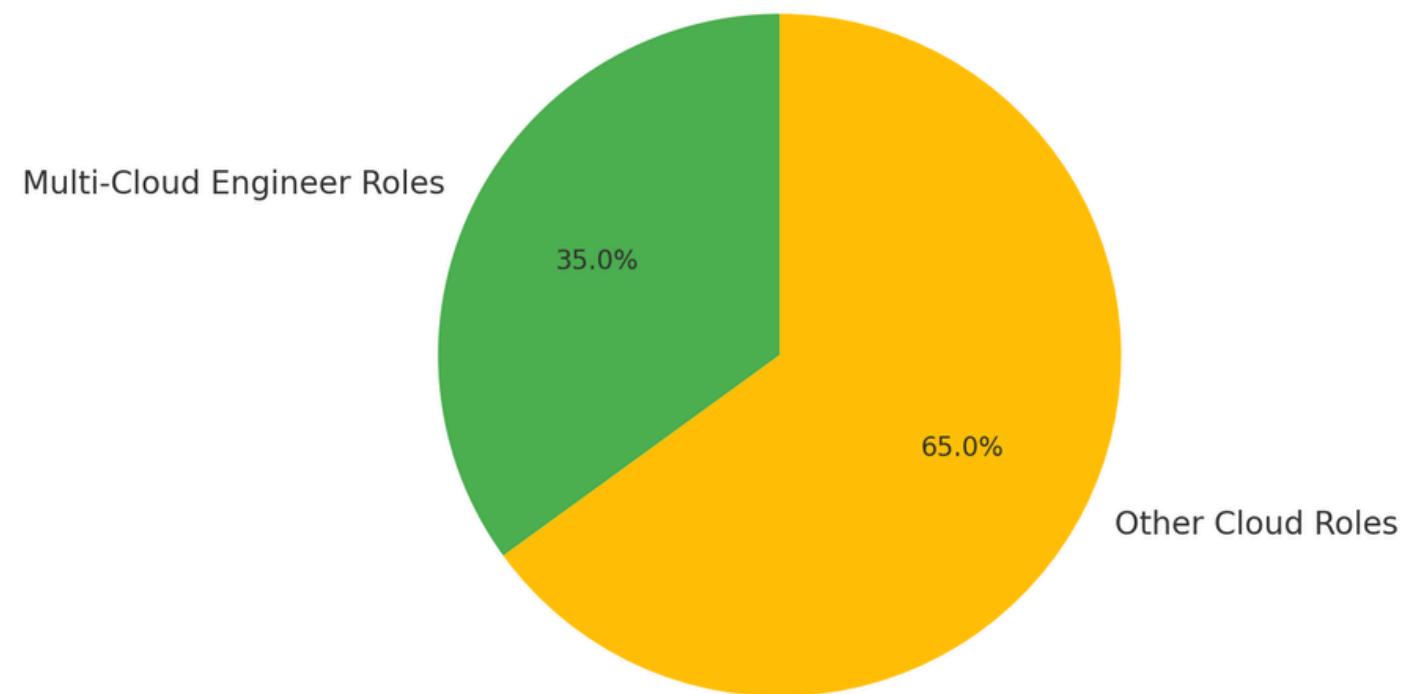
03

HashiCorp Survey (2023-24):  
"76% of companies run workloads in  
multiple clouds, citing security, resiliency,  
and cost optimization."

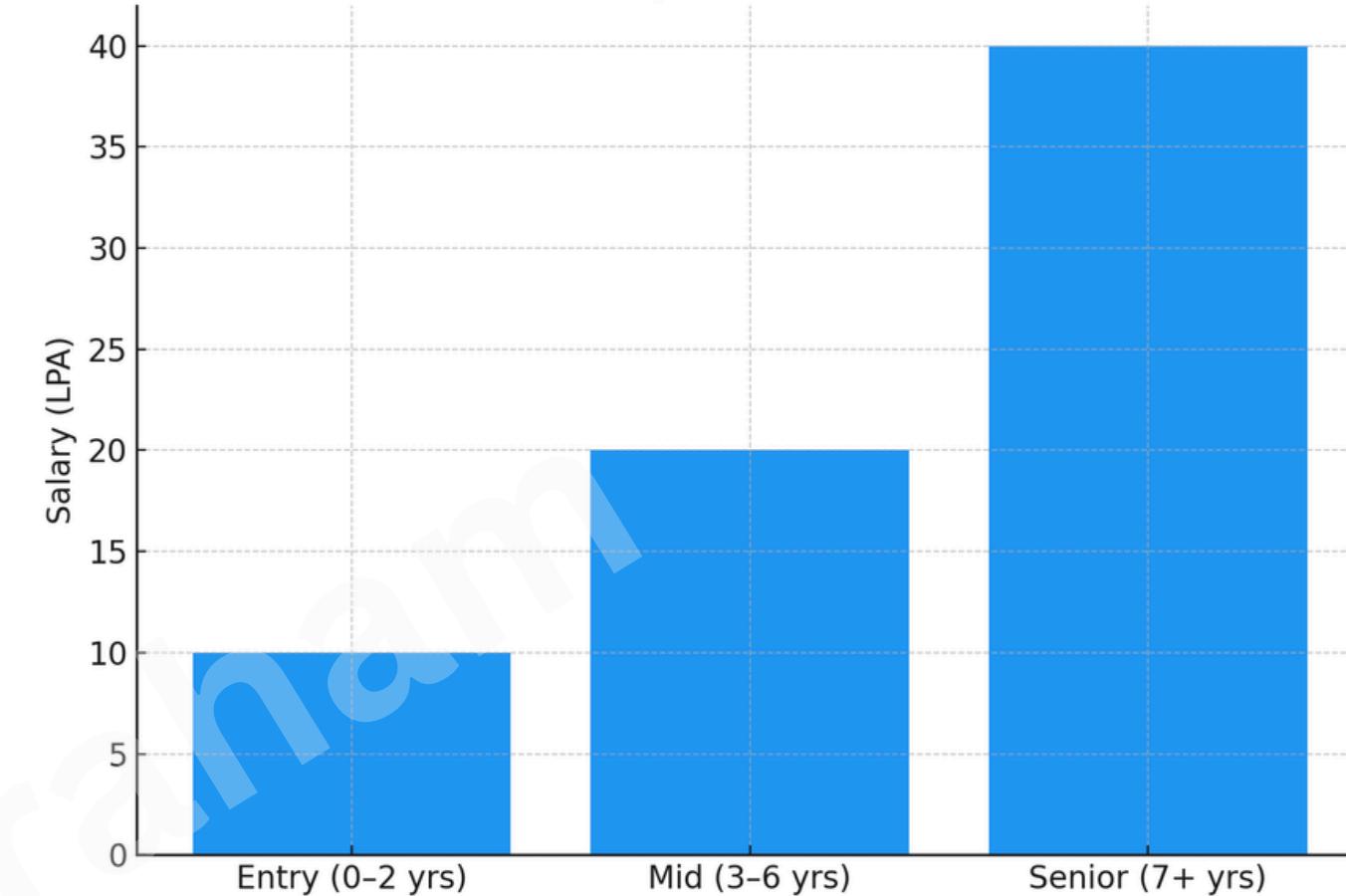
04

# Multi-Cloud Engineer Job Market Overview (2025)

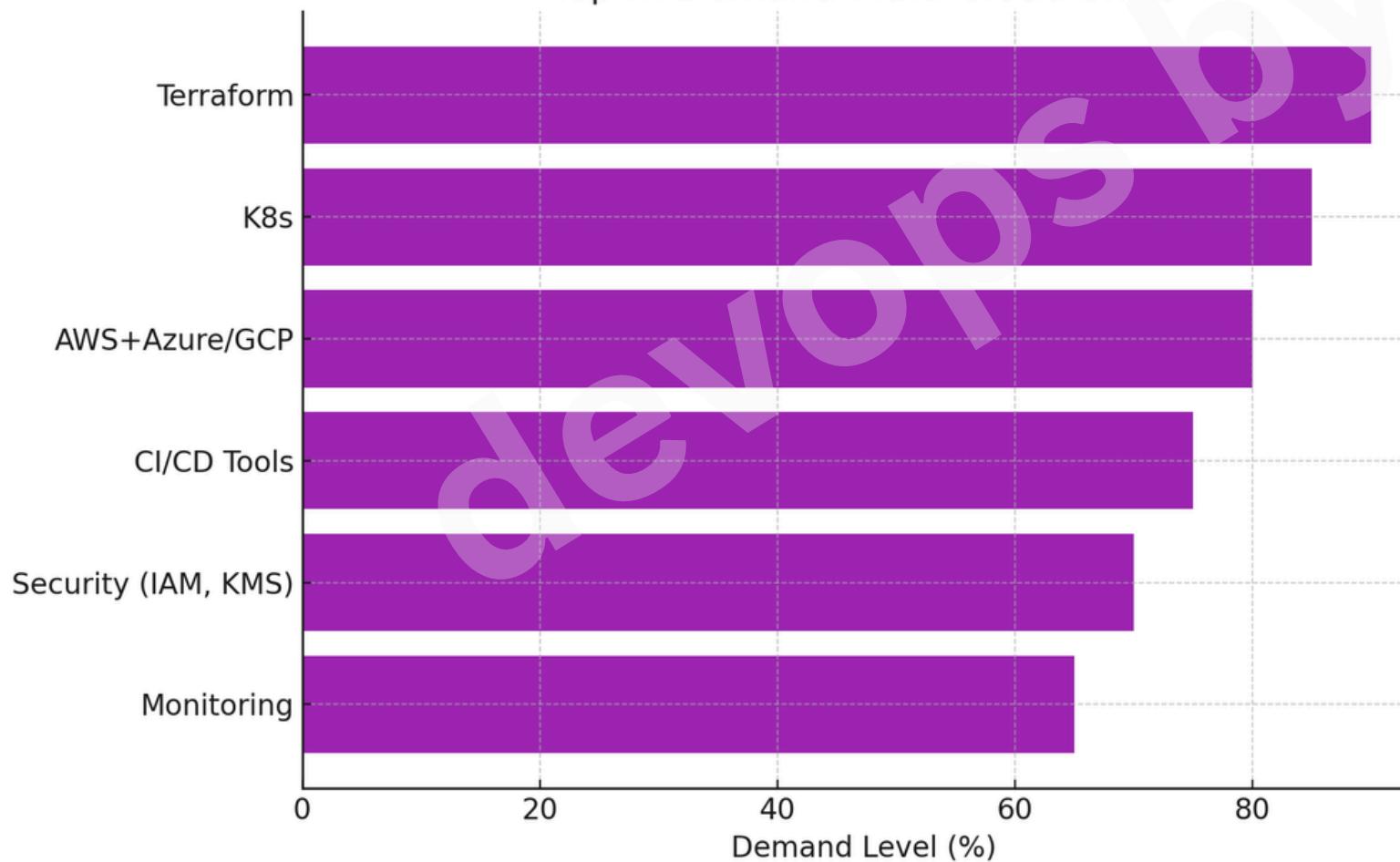
Job Role Share in Cloud Market



Multi-Cloud Salary Trends in India (in ₹ LPA)



Top In-Demand Multi-Cloud Skills



Industry-Wise Multi-Cloud Adoption (%)





THANK YOU  
FOR ATTENDING

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