

# **Introduction to Global infrastructure in AWS and AWS EC2 Service**



# Learning Objectives

- Describe the Regions and Availability Zone in AWS.
- Describe the Elastic Cloud Compute.

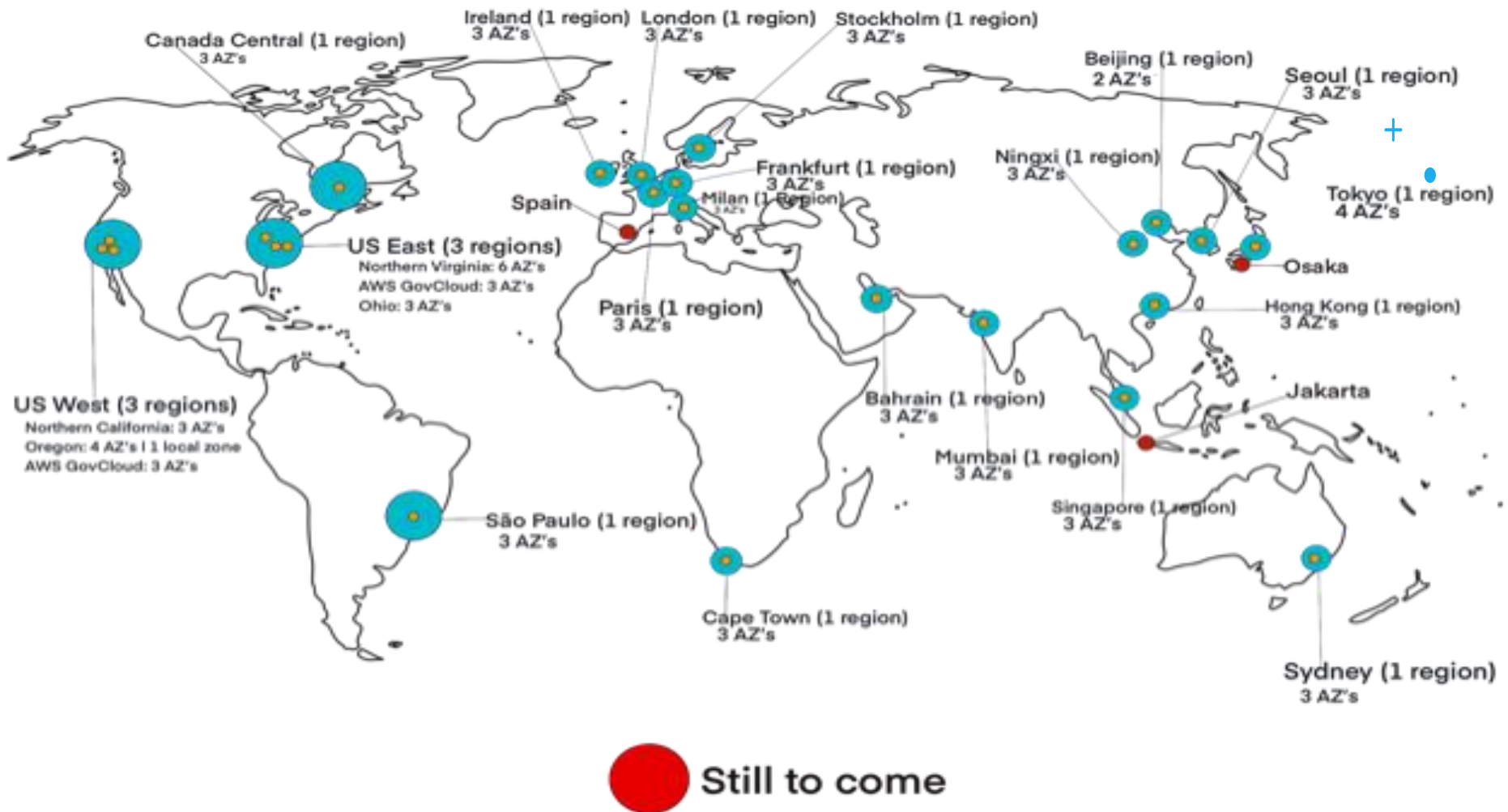
# Agenda

- OPENING (5 mins).
- CONTENT & PRACTICE (60 mins).
- CFU (20mins)
- CLOSING (5 mins).



# Introduction to AWS Global Infrastructure and EC2.

# Global Infrastructure





- 23 Regions
- 2 or more than 2 AZs in a region

# Regions

- A Distinct Geographical Location where AWS has it's own infrastructure.
- Each AWS region is completely autonomous.
- At present time 21 region and 2 GOVs cloud region.
  
- What are factors for choosing an AWS Region ?
  1. Services
  2. Security
  3. Cost
  4. Latency

# Availability Zones (AZ)

- Highly Available Data Centers
- Each AZs Totally Isolated With Each Other
- Each Regions more than 3 AZs
- Availability - 99.9999%
- Durability – 99.9999999999999%





# Only cloud provider that supports macOS

#Choice of Intel, AMD, and Arm-based processors

- Compute Service : Provide resizable compute capacity in the cloud.
- It allows organizations to obtain and configure virtual servers in amazon's data centers.
- Increase or decrease capacity within minutes, not hours or days.
- SLA commitment of 99.999% availability for each Amazon EC2 region. Each region consists of at least 3 availability zones.

# EC2 Instance

- ❑ An EC2 instance is a Virtual Server in Amazon's Elastic Compute Cloud ([EC2](#)) for running applications on the Amazon Web Services Infrastructure.
- ❑ AMI (Amazon Machine Image): An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.

# EC2 Instance

## ❖ Communities AMIs

- Amazon linux
- RedHat
- Ubuntu
- Debian
- Centos
- Fedora
- SuSe
- Windows
- MacOS
- Instances are created from Amazon Machine Images

# EC2 Instances

## Instance Types

### General Purpose:

A1	M6g
T4g	M5
T3	M5a
T3a	M5n
T2	M4

### Compute Optimized:

C6g	C5n
C5	C4
C5a	

### Memory Optimized:

R6g	R4
R5	X1e
R5a	X1
R5n	z1d

### Storage Optimized:

I3
I3en
D2
H1

### Accelerated Computing:

P3
P2
Inf1
G4
G3
F1

# EC2 Instance Type

- EC2 (T2 Micro) Instance Type is free tier eligible. Micro instances are eligible for the AWS free usage tier.
- For the first 12 months following your AWS sign-up date, you get up to 750 hours of micro instances each month.
- When your free usage tier expires or if your usage exceeds the free tier restrictions, you pay standard, pay-as-you-go service rates. (T2 Micro) Comes Under General Purpose.

# Reserve Instances



EC2 instance



On Demand



NURI



PURI



AURI



RDS instance

# Configure Instance Details

Number of Instances

Network (VPC)

Subnet (Zone)

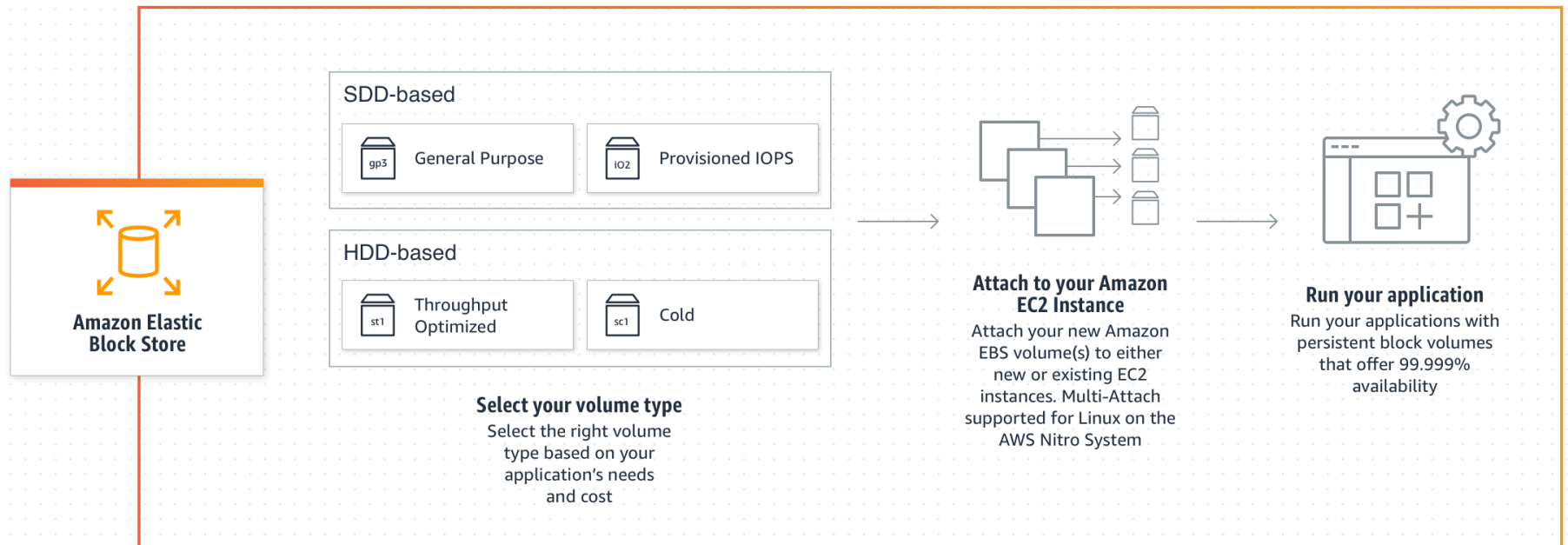
# Storage In EC2

1. {
  - Root EBS Volume
2. {
  - Extra EBS

**EBS** – Elastic Block Storage - Amazon Elastic Block Store (Amazon EBS) is an easy-to-use, scalable, high-performance block-storage service designed for Amazon Elastic Compute Cloud (Amazon EC2).



# Elastic Block Store(EBS)

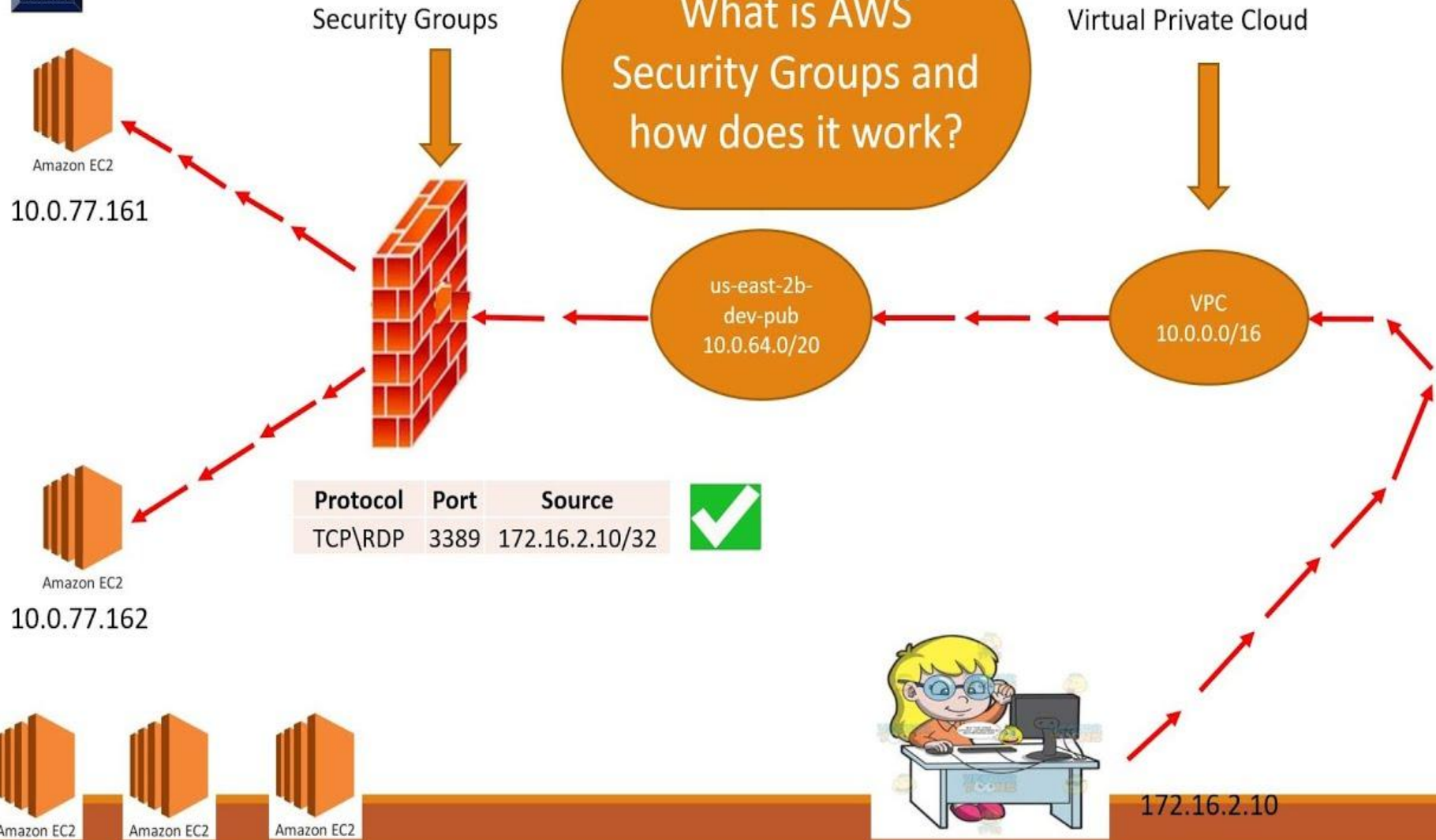


# Introduction



## AWS Security Groups: Instance Level Security

# Security Group



# Security Group

- A security group is a set of firewall rules that control the traffic for your instance. you can add rules to allow specific traffic to reach your instance.
- For example, if you want to set up a web server and allow Internet traffic to reach your instance add rules that allow unrestricted access to the HTTP and HTTPS ports.

# Security Group

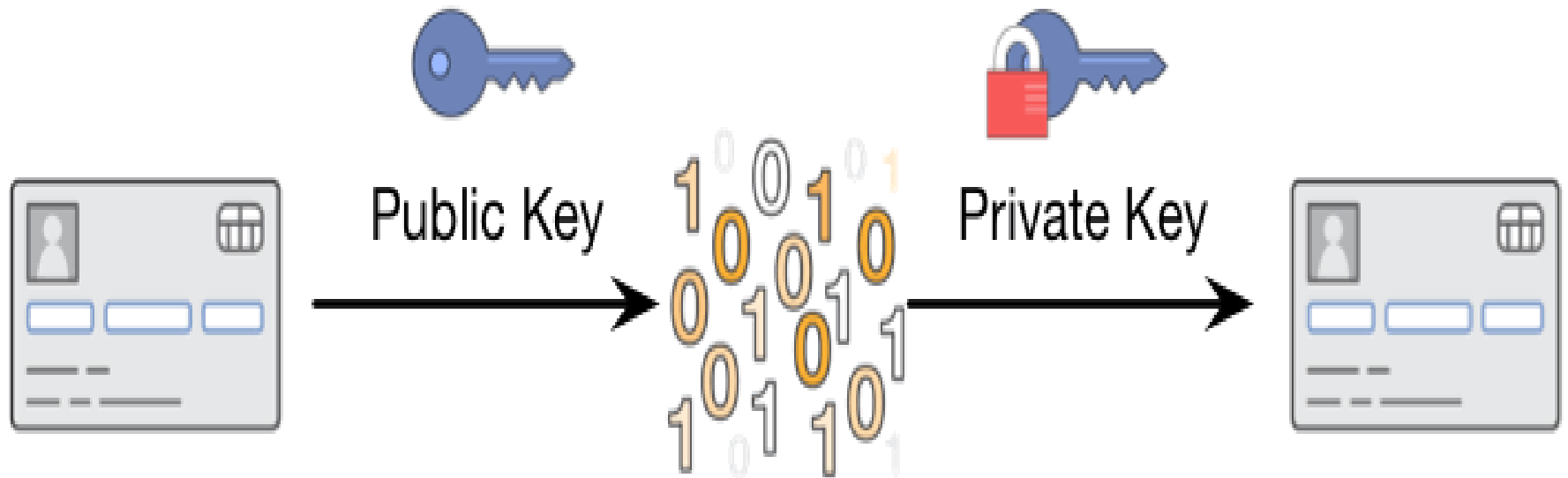
SSH

- Secure Shell
- Port range is 22 for Linux Machine

RDP

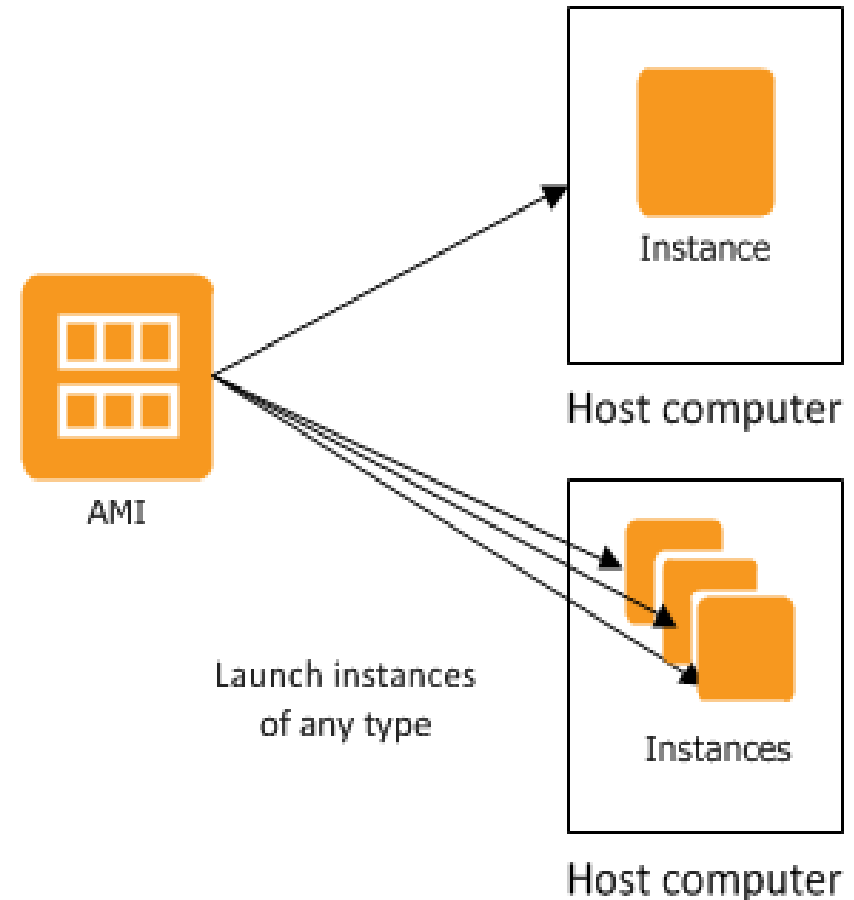
- Remote Desktop Protocol
- Port range is 3389 for Window Machine

# Key Pairs



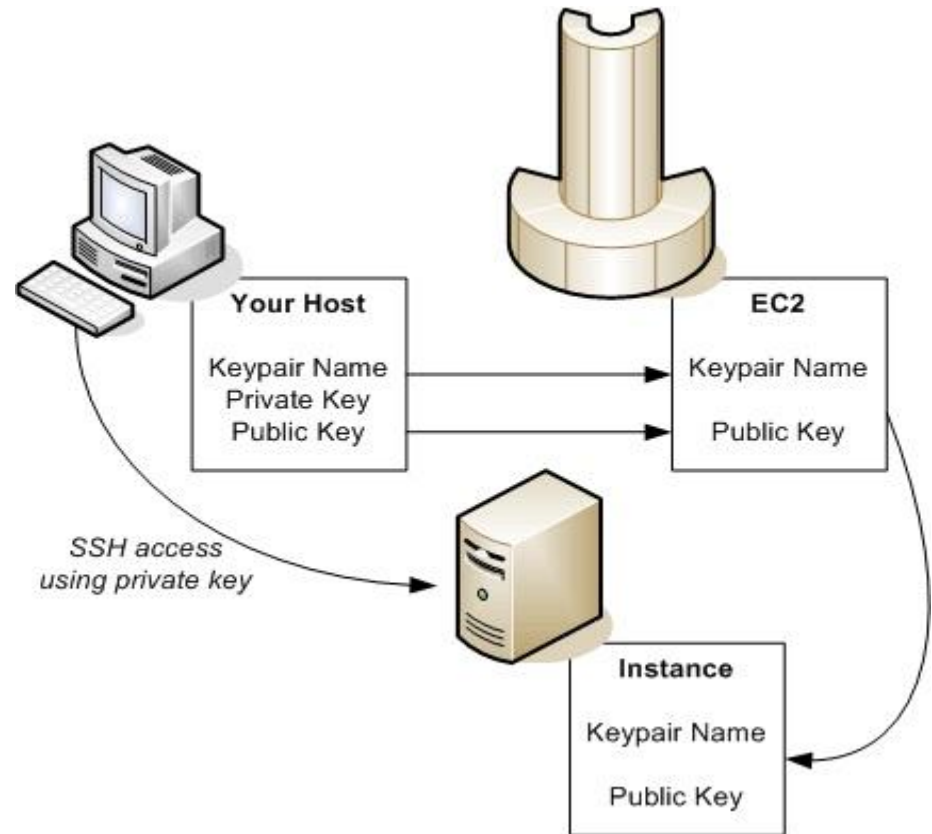
# Key Pairs

- A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely.
- For Windows AMIs, the private key file is required to obtain the password used to log into your instance.



# Key Pairs

- For Linux AMIs, the private key file allows you to securely SSH into your instance.
- Amazon EC2 supports two types of encryption technologies - ED25519 and RSA key pair types.





# AWS Hands-on Labs



# Labs on AWS Management Console

- How to create an EC2 Instance using Amazon Linux and windows.
- How to attach EBS volume on running instance.
- How to create snapshot.
- How to create an image.
- How to attach elastic IP on running instance.
- How to enable termination protection.
- How to change the security group on running instance and many more.

**Let's have a**



**Look at...**

# How to create an EC2 Instance using Amazon Linux and windows:

The screenshot displays the AWS Management Console interface. At the top, the navigation bar includes the AWS logo, 'AWS' with a dropdown arrow, 'Services' with a dropdown arrow, and 'Edit' with a dropdown arrow. On the left sidebar, the 'EC2 Dashboard' link is highlighted with a red box, and a red arrow points from it to the 'Resources' section. The 'Resources' section is titled 'Resources' and contains the text 'You are using the following Amazon EC2 resources in the US East (N. Virginia) region:'. Below this text, a red box highlights a list of resources: 3 Running Instances, 0 Dedicated Hosts, 12 Volumes, 22 Key Pairs, 0 Placement Groups, 4 Elastic IPs, 17 Snapshots, 0 Load Balancers, and 28 Security Groups. Below the resources list, there is a light blue banner with the text 'Need fast, reliable, scalable, fully-managed message queuing? Try Amazon Simple Queue Service.' and a close button. Below the banner, the 'Create Instance' section is visible, with the text 'To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC2 instance.' and a blue 'Launch Instance' button. At the bottom of the 'Create Instance' section, there is a note: 'Note: Your instances will launch in the US East (N. Virginia) region'.

**EC2 Dashboard**

Events  
Tags  
Reports  
Limits

INSTANCES

Instances  
Spot Requests  
Reserved Instances  
Scheduled Instances  
Commands  
Dedicated Hosts

IMAGES

AMIs  
Bundle Tasks

ELASTIC BLOCK STORE

Volumes  
Snapshots

## Resources

You are using the following Amazon EC2 resources in the US East (N. Virginia) region:

3 Running Instances	4 Elastic IPs
0 Dedicated Hosts	17 Snapshots
12 Volumes	0 Load Balancers
22 Key Pairs	28 Security Groups
0 Placement Groups	

Need fast, reliable, scalable, fully-managed message queuing? Try Amazon Simple Queue Service.

## Create Instance

To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC2 instance.

**Launch Instance**

Note: Your instances will launch in the US East (N. Virginia) region

**Note:** These Labs will perform on AWS Management Console.

# How to attach EBS volume on running instance:

INSTANCES

- Instances
- Launch Templates
- Spot Requests
- Reserved Instances
- Dedicated Hosts
- Scheduled Instances

IMAGES

- AMIs
- Bundle Tasks

ELASTIC BLOCK STORE

- Volumes**
- Snapshots

Create Volume Actions

Filter by tags and attributes or search by keyword

<input type="checkbox"/>	Name	Volume ID	Size	Volume Type	IOPS
<input type="checkbox"/>		vol-06209f64...	70 GiB	gp2	210 / 3000

**Note:** These Labs will perform on AWS Management Console.



# **Check for Understanding**

# Closing



What did we learn today?